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ABSTRACT

This manual provides information concerning the basic skills needed to perform the tasks of the occupation of entry-level clerk-typist. It is intended for vocational program directors and administrators, vocational counselors, vocational instructors, basic skills instructors, and curriculum developers. An introduction reviews the study to link basic skills to occupational tasks and clerk-typist training, defines terminology, describes the methodology, and suggests uses for the study. A narrative summary of the clerk-typist basic skills data and of the frequency of performance data associated with occupational tasks is contained in section 2. Section 3 is a clerk-typist occupational task list. In the final section, clerk-typists' tasks are presented by individual basic skills area: job-related reading, job-related mathematics, job-related writing, and job-related listening and speaking. Discussion of each skill area contains the following elements: related terminology, a taxonomy that takes a job-related approach to the basic skills and expresses them in performance terms, discussion of the data regarding the basic skills required for task performance, linking of tasks to specific applications of the basic skill, and a list of occupationally specific instructional materials for teaching the job-related basic skill. Appendixes include the survey form. (YLB)

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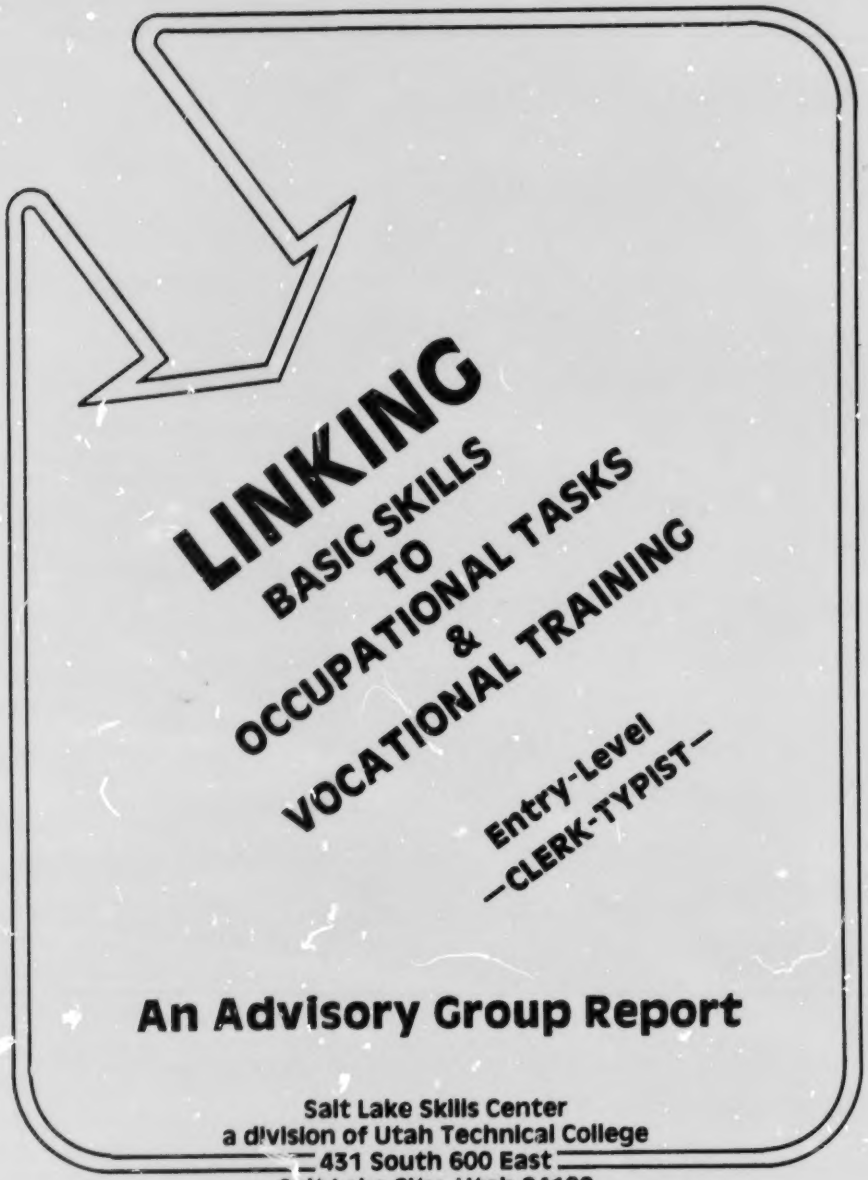

LINKING
BASIC SKILLS TO OCCUPATIONAL TASKS & VOCATIONAL TRAINING

Entry-Level —CLERK-TYPIST—

An Advisory Group Report

Salt Lake Skills Center
a division of Utah Technical College
431 South 600 East
Salt Lake City, Utah 84102
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Section I
Introduction

Study Overview

This project was undertaken in response to a need expressed by vocational administrators and educators for more detailed information concerning the basic skills needed to perform occupational tasks. The occupation of entry-level clerk-typist was studied in this report.

The information compiled in this manual is intended for the following audience:

Vocational Program Directors and Administrators
Vocational Counselors
Vocational Instructors
Basic Skills Instructors
Curricula Developers

An advisory group consisting of clerk-typists, supervisors, clerical instructors, and basic skills instructors was asked to determine the specific basic skills needed in order to perform each clerk-typist task. Participants from industry represented small, medium and large companies.

Data collected at this meeting provides the basis for drawing some preliminary conclusions since the purpose of the advisory group was to gather "experienced opinion" rather than to conduct formal or extensive research.

Implications for Training

The data gathered in this study may be helpful in forming some decisions concerning the basic skills which appear to be most important for students in clerical training programs.

Training which links vocational skills to basic skills could be organized to meet the educational needs of individual students. For example, if a student is unable to meet the math requirements of record-keeping tasks, he/she could begin the training program by taking courses in filing or typing, since the occupational tasks in these areas appear to require fewer math tasks. Meanwhile, the student could be building upon his/her math proficiencies to prepare for duty areas which require more math.

Vocational training could be partially tailored to the individual student's strengths and weaknesses in the basic skills.

Terminology

Basic skills: (occupationally oriented)	Essential reading, math, writing, listening and speaking skills needed to secure and maintain employment.
Basic skills taxonomies:	Classification systems which identify a hierarchy of reading, mathematics, writing, listening, and speaking skills stated in performance terms.
Job-related basic skills tasks:	Reading, mathematics, writing, listening, and speaking tasks performed in conjunction with occupational tasks.
Clerk-typist:	A worker who compiles data and operates a typewriter in performance of routine clerical duties such as maintaining business records and reports.
Entry-level clerk-typist:	A person entering the occupation of clerk-typist.
Fully-qualified clerk-typist:	A person who has been working for at least six months in a given occupation.
Occupation:	The overall category into which particular duties are categorized.
Duty:	A major category of work which consists of related tasks performed by a worker in a given occupation.
Task:	A measurable element of work usually performed by a single worker in a short span of time. Tasks are grouped into duty areas.
Task list:	A listing of the identified tasks performed by workers in a given occupation.
Competency:	The demonstrated ability to perform specific tasks.
Competency-based vocational education: (performance based)	Instructional programs which derive their content from the tasks performed in each occupation and assess student performance on the basis of pre-set performance standards.

Competency-based instruction:	Instruction which places emphasis upon the ability to do, as well as on learning how and why. Student performance and knowlege is individually evaluated against the stated criteria, rather than against group norms.
Criterion:	Minimum performance standard which must be met in order to master a specific skill.
Criterion-referenced measure:	An evaluation of student performance or knowlege of a task according to the conditions and standards stated in the performance objective.
DOT: (Dictionary of Occupational Titles)	A U. S. Department of Labor publication which consists of standardized occupational information concerning job content and definitions of some 20,000 occupations.
VPO: (Vocational Preparations and Occupations Handbook)	A National Occupational Information Coordinating Committee publication designed to link U. S. government codes to occupational classification systems.
ERIC: (The Educational Resources Information Center)	A national information system suppo·ted and operated since 1966 by the National Institute of Education (NIE) to provide ready access to educational literature by and for educational practitioners and scholars.

The Problem

Basic skills such as reading, mathematics, writing, listening, and speaking are an integral part of occupational duties and tasks. However, the basic skills portion of vocational training in an educational setting is not usually linked specifically to the technical instruction.

Instructors of basic skills in a vocational/technical college often have general or intuitive information concerning the basic skills required on the job, but lack more data-based information which would link basic skills instruction to the technical training. Vocational counselors, curricula developers, and educational administrators also need more specific information if they are to make informed decisions regarding the basic skill requirements of students in vocational training programs.

Few instructional materials have been developed to aid instructors in teaching occupationally specific basic skills. However, recent research has prompted some publishers' awareness of the increased demand for such materials, and they are beginning to respond.

The Need

The Utah State Department of Employment Security has projected that the number of new jobs in Utah which are related to vocational/technical education will have increased from 421,300 in 1981 to 554,080 in 1986.[1] Vocational institutions must equip students with the skills necessary for success in those jobs.

It is becoming increasingly apparent that successful job performance demands a level of proficiency in basic academic skills as well as occupational skills. Yet few attempts have been made to link basic skills instruction to vocational training and encourage instructors to teach basic skills that are criterion-referenced to specific occupations.

Objectives

The following objectives have been set forth in an attempt to address this need to link basic skills to occupational tasks and clerk-typist training:

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1. Utah Job Outlook for Vocational-Technical Occupations: Statewide and Planning Districts, 1981 - 1986. (Salt Lake City, Utah: Labor Market Information Services, Utah Department of Employment Security, March 1981).

Objectives:

Compile a current list of clerk-typist duties and tasks.

Determine the relative frequency with which the occupational tasks are done by clerk-typists.

Locate and/or develop basic skills taxonomies which are written in performance terms.

Analyze each occupational task to determine the (specific) basic skills required for task performance.

Link the specific basic skills to each occupational task.

Determine the relative importance of each basic skill (reading, mathematics, writing, listening, and speaking) for entry-level clerk-typists.

Compile a list of occupationally specific instructional materials currently available.

Background

A study published by the National Institute of Vocational Education illustrates the point that there is a need to define occupationally specific basic skill proficiencies. "....It would be most useful to know the level of basic skill attainment of students in different vocational programs so that the gap, if any, between proficiency of students who are preparing for particular occupations and the demands placed on workers in those occupations can be identified and closed.[2]

The U.S. Office Office of Vocational and Adult Education also supports the idea of linking basic skills to vocational education in the following statement published in the 1979 Federal Register: "Basic educational skills are essential to all persons, and vocational education must complement basic skills/remedial programs if persons are to succeed in vocational education programs."[3]

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2. Corman, Louise, Basic Skills Proficiencies of Secondary Vocational Education Students. (Washington D.C.: Vocational Education Study Publication No. 4, U.S. Department of Education, November, 1980).
3. Federal Register (June 13, 1970), p. 33961.

The Dictionary of Occupational Titles (DOT), Fourth Edition, provides ratings which indicate the complexity of "worker functions" in every occupation. These ratings were designed to provide information concerning the skills necessary in working with data (including numbers, words, symbols, and concepts), people and things.[4] This system addresses the need for both academic and occupational skills on the job. However, the aforementioned National Institute of Education study expresses the limitations of the DOT ratings. "These ratings permit only indirect inferences about the level of reading, writing, and arithmetic skills required in jobs."[5]

Another step toward linking academic skills to occupational tasks is the Vocational Preparation and Occupations Handbook (VPO), which was developed in 1979 by the National Occupational Information Coordinating Committee.[6] The primary purpose of the VPO is to integrate various occupational and U.S. government classification systems. However, the focus of the publication is not entry-level and the GED (General Educational Development) classification system it employees uses general terms which are difficult to translate into basic skills instruction.

Occupational Task Analysis

Occupational task analysis is another response to the need for defining tasks performed by workers and the skills needed on the job. Task analyses are, however, oriented mostly toward occupational tasks, not academic skills required to perform the tasks. In a study funded through the Massachusetts State College, G. Porter Horne notes that, "Most job (task) analyses have not been specifically oriented toward identifying reading, writing, and math skills required for job performance," and, "Business and industry also operate a number of basic skills training programs. However, research on these programs failed to discover any cooperation between task analysts and directors of reading, writing, and/or math programs."[7]

Few occupationally specific basic skills analyses have been attempted, and nationally developed occupational task analyses do not always reflect local training considerations.

Philosophy

Since the basic academic skills needed to perform occupational tasks are not necessarily the same skills learned in a traditional classroom setting, it is important to determine the specific basic skills which industry requires of entry-level clerk-typists. Training can, then, be criterion-referenced to a particular occupation. For instance, a clerk-typist may need to refer to an operator's manual before operating a new typewriter. This type of basic reading skill can be

4. Dictionary of Occupational Titles, Fourth Edition. 1979
5. Corman, op. cit.
6. National Occupational Information Coordinating Commitee, Vocational Preparations & Occupations, Interim Edition, Volume 1, Occupational and Educational Code Crosswalk. (Ventura County Superintendent of Schools Office, 1979.)
7. G. Porter Horne, Functional Job Literacy: Implications for Instruction. (Boston, Mass., 1979, Massachusetts State College System).

taught in conjunction with occupational skills in a vocational training program.

Basic skills which are useful for accomplishing an occupational task might be termed "job-related basic skills." When a clerk-typist orders supplies over the telephone, the conversation consists of a series of job-related listening and speaking skills which are directly linked to the job task of ordering supplies. In vocational education, where training is often a "hands on" simulation of the actual work setting, a competency-based approach to basic skills which states skills in performance terms is a more relevant one.

This study does not take an approach to basic skills based upon grade level proficiencies or "survival (life) skills"; rather, it takes an occupationally specific approach which is criterion-referenced to the occupation of clerk-typist and is competency-based.

Teaching basic skills in a vocational context provides students with an opportunity to relate basic academic skills to an occupation for which they have an expressed interest. Because vocational students are motivated to learn the job skills required of the occupation, it is assumed that job-related basic skills can add meaning and purpose to the basic skills portion of students' vocational training programs.

Methodology

1. ERIC Search

An ERIC (Educational Resources Information Center) search was conducted in the spring of 1981 to find literature describing research on basic skills in relationship to the occupation of clerk-typist. Information obtained as a result of this search was analyzed for its relevance to this project. The following descriptors were used in the search which encompassed the years from 1970 to 1981:

Job skills	Functional literacy
Employment qualifications	Basic skills
Entry workers	Employable skills
Adult basic education	Communication skills
Vocational education	Remedial mathematics
Vocational training	Training (occupational)
Adult vocational training	Workers
Business education	Curriculum
Technical education	Competency-based education
Trade and industrial ed	Task performance
Content area reading	Job analysis
Functional reading	Reading skills
Remedial reading	Minimum competencies
Literacy	Occupational information
Functional literacy	Office occupations

Highlights of the ERIC search:

A review of the literature obtained through ERIC revealed some studies pertaining to basic skills and occupational task performance. Those which indicated a correlation between reading, mathematics, writing, listening, and/or speaking skills and occupational tasks were read carefully to determine whether a linkage between precise basic skills and clerk-typist tasks had already been developed in other geographic areas.

Some attempts had, in fact, been made to link basic skills to occupational tasks. The following projects were found to be significant:

A rather large research project was developed in Prince Albert, Saskatchewan in 1975. The results, published in the Generic Skills Handbook of Occupational Information, appears to have been the first extensive attempt at linking basic skills to occupational tasks.

The California State Department of Education sponsored a 1977 project, Adult Competency Education (ACE) Kit: Basic Skills in Speaking, Math, and Reading for Employment, which includes research in more than 70 occupations.

The Instructional Materials Laboratory at Ohio State University has developed Task/Activity analyses which include some basic skills tasks for many technical occupations.

A 1980 project, currently being field-tested in vocational institutions countrywide, was undertaken by the Cornell Institute for Occupational Education. This project is entitled Teaching Basic Skills Through Vocational Education.

While these projects are significant, none identifies the exact basic skills needed to perform all the occupational tasks in a given occupation.

2. Telephone contacts and form letter

Telephone numbers and addresses of new contacts were compiled from: The ERIC search, program reports located in the Salt Lake Skills Center Curriculum Development office, the reading and mathematics libraries, and professional contacts obtained from other staff members.

A form letter describing the Salt Lake Skills Center project was drafted to solicit any current information or programs being developed to link basic skills to vocational training. (See Appendix A for a copy of this letter.) Eighty-one letters were sent and 21 responses were received.

Approximately fifty telephone contacts were made to agencies and institutions such as the United States Office of Education, the National Institute of Vocational Education, colleges, universities, state boards

and departments of education, post-secondary technical institutions and community colleges, military branches of the government, and private businesses and industries throughout the United States and Canada.

Research reports, program reports, bibliographies, catalogues, curricula, anecdotal experience, and recommendations were obtained from these contacts. A directory of programs developed and studies conducted nation-wide was compiled as a resource to be used for future reference.

A library consisting of these occupationally-oriented basic skills materials was set up in the Salt Lake Skills Center Curricula Development Office.

3. Design of the survey form linking basic skills to occupational tasks
(See Appendix B for sample page from the clerk-typist survey)

a. Occupational task list:
An occupational task analysis for an entry-level clerk-typist developed by the Instructional Materials Laboratory, Ohio State University, was used to formulate the initial task list. This list was then given to three experts in the field who made suggestions for additions and/or deletions on the list. They also updated the language and organized the tasks into six duty categories: general office, receptionist, postal, filing, typing (inclusive of word processing) and recordkeeping.

b. The frequency column:
A column to the right of the occupational task column was included in order for the respondents to report the frequency of performance for each occupational task--daily, weekly, less often than weekly, or never.

The tasks which the advisory group reported were never performed by clerk-typists were dropped from the occupational task list. Additional experts in the field were consulted after the advisory group had met. These experts indicated that some of the occupational tasks were more appropriately secretarial tasks. Those tasks were also omitted from the task list. For the final list of clerk-typist tasks, those which were too minute or which overlapped in function were either dropped or combined.

A total of 89 clerk-typist tasks were compiled to become the final task list. (See Section III: Clerk-typist Occupational Task List)

An average of the frequency responses for each task was computed to indicate the mean frequency of task performance. For most tasks, an average of seven or more responses indicated in the frequency column was used.

c. Equipment, materials, job aids, machinery, and supplies information:
Space was provided at the right of the frequency column for the purpose of soliciting information concerning any items which are used to accomplish an occupational task. This information was thought

to be useful to basic skills instructors interested in teaching occupationally specific basic skills through simulations of job situations.

d. Basic skills columns:
The final columns on the far right of the survey page were added for the purpose of soliciting information concerning the basic skill or skills tasks which are performed in order to accomplish each occupational task.

e. Final format of the survey:
Completion of the survey included adding boxes for responses and a project logo at the top of the first page.

4. Design of the basic skills taxonomies
(See Appendix C)

In each basic skill area (reading, writing, mathematics, listening, and speaking) research was conducted to find comptency-based descriptions of basic skills which were specific enough for the purposes of the study, yet easily interpreted by the respondents. If an entire taxonomy appeared both comprehensive and clearly defined, as in the case of listening and speaking, it was used. Several references were consulted to develop the reading, writing, and mathematics taxonomies.

Specialists in reading, writing, and mathematics (who also had some knowlege of vocational education) reviewed the taxonomies which had been developed and modifications were made according to their suggestions.

a. Keys for coding basic skills:
Each basic skill taxonomy was given an alphabetical or numerical coding system so that respondents could record the basic skills on the survey form more readily.

5. Sources used to collect data

Members of the advisory group were asked to act as respondents to the survey. The group included:

-Clerk-typists from small, medium-sized, and large companies of various types

-Supervisors of entry-level clerk-typists from small, medium-sized, and large companies of various types

-Clerical, reading, and math instructors

6. Gathering data

Permission was obtained from administrative officials of five companies for an individual clerk-typist or supervisor from each company to attend a half-day meeting at The Salt Lake Skills Center, a Division of Utah Technical College. Clerical, reading, and math instructors

were also asked to participate in this advisory group meeting. Lunch was provided after the meeting.

When all the participants arrived, an explanation of the project and the rationale for basic skills research in vocational education was given; the potential positive effects on training that this research could provide were discussed.

The participants were divided into three groups. Each group included (1) a line-level clerk-typist, (2) a supervisor, and (3) a clerical instructor. Basic skills instructors worked with the groups as consultants. Each group focused on one or two of the basic skills taxonomies when determining the basic skills needed to perform each occupational task.

Members of the groups were asked to fill out the frequency columns of the survey form independently; but "brainstorming" and discussion were encouraged when responding to the materials and equipment column as well as the basic skills column. One member of each group acted as a scribe to record data exclusive of frequency data.

Suggested Uses for this Study

The information gathered in this study is useful to various individuals concerned with vocational education--counselors, instructors, administrators, and curricula developers.

Counselors can use the information to better determine the basic skill needs of students entering clerical training programs, give students specific information concerning both academic and occupational skills necessary for clerk-typists, or as a guide in sequencing schedules which meet each student's individual basic skill needs as well as his/her occupational skill needs.

Vocational instructors can use the information to determine whether the curricula being used is up-to-date and reflects the current needs of local industry and to communicate with basic skills instructors--in performance terms--concerns about individual students' competencies in the basic skills.

Basic skills instructors can use the information to become familiar with some specific applications of job-related basic skills tasks that are performed by clerk-typists, to determine which basic skills are the most significant as well as those which are the least significant for clerical students, plan curricula which reflects the basic skill needs of each student's training program, and communicate the job-relatedness of basic skills taught in the classroom or shop to students.

Vocational program directors and administrators can use the information to become more aware of the occupationally relevant basic skill needs of clerical students and the benefits of a job-related basic skills program. They can also use this manual to identify and communicate to staff members (instructors, counselors, job placement personnel, etc.) the performance demands of industry.

Curricula developers can use the information to develop curricula which is occupationally relevant and specific and as a guide for locating instructional materials which present information on occupationally specific basic skills.

The following chart outlines sections of the manual which are particularly helpful to counselors, vocational instructors, basic skills instructors, directors/administrators, and curricula developers.

COUNSELORS	Section I Section II Section IV
VOCATIONAL INSTRUCTORS	Section I Section II Section III Section IV
BASIC SKILLS INSTRUCTORS	Section I Section II Section IV
DIRECTORS AND ADMINISTRATORS	Section I Section II Section III Section IV
CURRICULA DEVELOPERS	Section I Section II Section III Section IV

Section II

Summary of Results and Conclusions

Some individuals for whom this report was printed may wish to review a brief summary of the more detailed data in the individual basic skills sections and in the appendixes. Therefore, a percentage analysis of the total basic skills data is provided in figure CT-1, along with a narrative summary of the findings in each of the basic skill areas.

The frequency data associated with occupational tasks concludes this section.

The figure below is an analysis of the various basic skill requirements of a clerk-typist by percentages:

BASIC SKILLS REQUIRED BY CLERK-TYPISTS ANALYZED
ACCORDING TO PERCENTAGE AND TYPE OF BASIC SKILL TASK

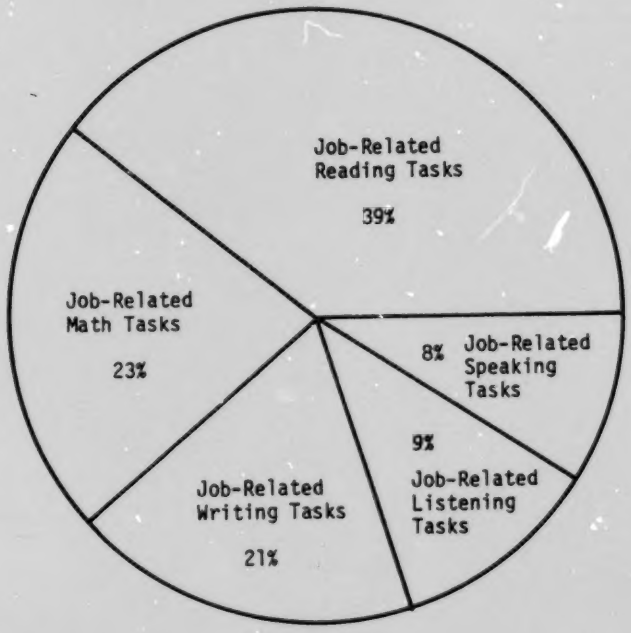


Figure CT-1

Of the five types of basic skill tasks included in the survey (reading, mathematics, writing, listening, and speaking), it was found that reading tasks were performed more often than the others. A total of 39% of all the basic skills tasks performed by clerk-typists were reading tasks.

Job-related math tasks and job-related writing tasks were found to be of almost equal necessity for clerk-typists. Math tasks accounted for 23%, and writing tasks, 21% of all basic skill tasks they perform.

Less than 20% of all the basic skill tasks performed by clerk-typists involved listening (9%) and speaking (8% of the total).

A NARRATIVE SUMMARY OF THE CLERK-TYPIST BASIC SKILLS DATA

Job-Related Reading Tasks

Relative importance of specific reading tasks:

The most important reading tasks in terms of frequency of performance were:

Reading to find facts, figures, specific information
Reading to follow directions or instructions
Reading to understand meaning of facts

The least important reading tasks in terms of frequency of performance were:

Reading to understand concepts
Reading to interpret writer's intent
Reading to analyze or solve problems

Duty categories:

The duty categories requiring the greatest number of reading tasks were:

Typing/word processing duties
Recordkeeping duties
Postal duties

Job-Related Math Tasks

Relative importance of specific mathematics tasks:

The most important math tasks in terms of frequency of performance were:

Numerical counting or ordering
Computation (adding, subtracting, multiplying, dividing)

The most important math concepts in terms of frequency of use were:

Whole numbers
Money/Cost

The least important math tasks in terms of frequency of performance were:

Solving word problems
Algebra problems
Geometry problems

Job-Related Math Tasks, continued

Duty categories:

The duty categories requiring the greatest number of math tasks were:

Recordkeeping duties
Postal duties
Receptionist duties
General office duties

Job-Related Writing Tasks

Relative importance of specific writing tasks:

The most important writing tasks in terms of frequency of performance were:

Forming numbers and letters
Handwriting or printing legibly
Spelling
Capitalization/Punctuation

The least important writing tasks in terms of frequency of performance were:

Writing paragraphs
memos, letters, reports

Duty categories:

The duty categories requiring the greatest number of writing tasks were:

Typing/word processing
Recordkeeping

Job-Related Listening Tasks

Relative importance of specific listening tasks:

The most important listening tasks in terms of frequency of performance were:

Listening to receive directions or instructions
Listening to receive descriptions, reports, specifications

Job-Related Listening Tasks, continued

The least important listening tasks in terms of frequency of performance were:

Listening to receive assurances, corrections, compliments, and reprimands
Listening to receive opinions, suggestions, proposals, and recommendations

Duty categories:

The duty categories requiring the greatest number of listening tasks were:

Postal duties
Receptionist duties
Typing/word processing duties

Job-Related Speaking Tasks

Relative importance of specific speaking tasks:

The most important speaking tasks in terms of frequency of performance were:

Questioning, expressing doubt, disputing
Explaining, defining, interpreting
Describing, reporting, specifying

The least important speaking tasks in terms of frequency of performance were:

Evaluating, giving an opinion, proposing, reconciling
Directing, ordering, instructing

Duty categories:

The duty categories requiring the greatest number of speaking tasks were:

Receptionist duties
Typing/word processing duties
Postal duties

A SUMMARY OF THE FREQUENCY DATA ASSOCIATED WITH CLERK-TYPIST TASKS AND DUTIES

Each advisory group member was asked to report the frequency with which an entry-level clerk-typist performs each of the 89 occupational tasks. The frequency categories provided in the survey were:

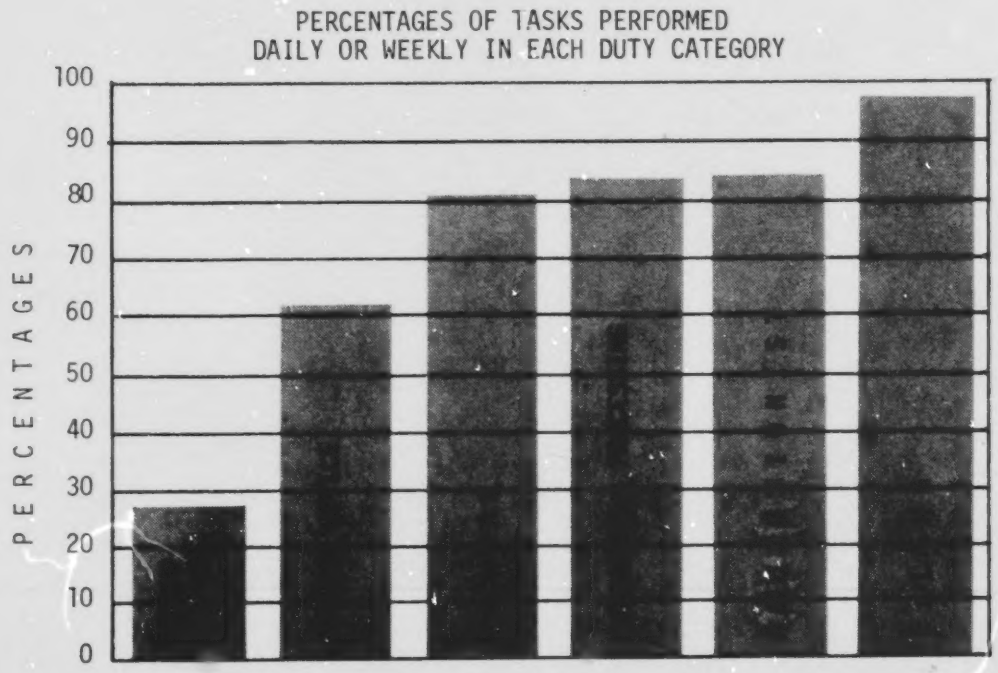
Daily
Weekly
Less often than weekly
Never

Individual responses varied widely. In some cases, they varied from "daily" to "never" when reporting the frequency of performance a single task. Therefore, the average frequency was computed for each occupational task.

If the average frequency of performance was judged to be either "daily" or "weekly," the task was listed separately. Then a comparison was made between the percentage of tasks within each duty category (general office, receptionist, postal, filing, typing/word processing, and recordkeeping) and those tasks separated from the rest. (See figure F-1.)

According to this small sample of individuals surveyed, the relative importance of tasks in each duty category (in terms of performance frequency) is indicated below:

Figure F-1



Frequency Data, continued

The advisory group data indicated that the filing category included tasks which were performed most often by clerk-typists. One hundred percent of the tasks that were performed in that category were found to be done at least once daily or weekly. Of the receptionist tasks, 85% were performed by clerk-typists at least once daily or weekly. Eighty-two percent of the typing/word processing tasks were done at least once daily or weekly, and 80% of the postal tasks were done with the same frequency. Sixty percent of the general office tasks were done at least once daily or weekly.

Recordkeeping tasks were done least often by clerk-typists. Only 24% of those tasks were done daily or weekly. Across all duty categories, the remaining percentage of tasks were done less often than weekly, or never.

Tasks performed with the highest frequency

The advisory group reported that the following clerk-typist tasks were performed at least once daily:

Operate copy machine
Operate paper punch
Answer telephone
Place local and long distance calls
Take and distribute telephone messages
Change dates on rubber stamp and/or calendar
Open and/or sort incoming mail
Distribute incoming mail
Forward outgoing mail
Maintain routing guide or distribution list
Mark, attach, or enclose materials for outgoing mail
Stuff,bundle, sort, and/or label outgoing mail
Take mail to mailroom, mailbox, and/or post office
Sort materials for filing
Prepare folders and/or folder labels for files
File materials and correspondence in alphabetical or numerical order
Pull files from filing cabinet to obtain information or materials
Search files for lost materials
Assist other employees in selecting and/or locating files
Operate typewriter
Proofread copy
Type memos, business letters, manuscripts, reports, proposals,etc.
Type and rule tabular materials (rows, figures, tables, columns, charts, graphs, etc.)
Type information on printed forms
Type addresses on envelopes or cards

Tasks never performed by clerk-typists

The advisory group reported that the following tasks were never performed on the job:

Take inventory
Keep records of bad debts
Operate a tape recorder
Keep records pertaining to employees belonging to the union

Section III

Clerk-Typist Occupational Task List

CLERK-TYPIST OCCUPATIONAL TASK LIST
ACCORDING TO DUTY CATEGORIES

General Office

Keep typewriter and other office equipment clean
Keep desk equipped with office supplies
Distribute supplies, forms, and publications
Hand carry items such as purchase orders or contracts to supplier
Collect money from employees for various purposes
Secure quotations on supplies from supplier
Select and order supplies and/or refreshments for meetings or conventions
Operate copy machine
Operate paper punch

Receptionist

Greet visitors and determine nature of business
Direct people to proper office or department
Introduce visitors to appropriate employee(s)
Answer telephone
Operate switchboard
Screen employer's calls
Keep record of long distance calls to determine long distance costs
Place local and long distance calls
Take and distribute telephone messages
Send or receive telegrams or cablegrams
Operate intercom
Keep appointment calendar for employer
Call to confirm appointments and meetings

Postal

Post notices
Change dates on rubber stamp and/or calendar
Sign for registered mail
Open and/or sort incoming mail
Attach any pertinent correspondence to incoming mail
Distribute incoming mail
Forward outgoing mail
Have mail insured, registered, or certified
Trace missing mail by telephone and/or correspondence
Maintain routing guide or distribution list
Compile and/or update mailing list
Mark, attach, or enclose materials for outgoing mail
Stuff, bundle, sort, and/or label outgoing mail
Wrap and tie packages
Weigh mail
Calculate postal rates
Operate postage meter
Keep postage meter record
Take mail to mailroom, mailbox, and/or post office
Obtain postage and/or mailing materials from post office
(certified & registered mail stickers, etc.)
Calculate cost and make arrangements for freight express

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CLERK-TYPIST OCCUPATIONAL TASK LIST
ACCORDING TO DUTY CATEGORIES Cont.

Filing

Sort materials for filing
Prepare folders and/or folder labels for files
File materials and correspondence in alphabetical or numerical order
Pull files from filing cabinet to obtain information or materials
Search files for lost materials
Merge or update files
Maintain classified or confidential files
Maintain an inactive file system
Establish and/or maintain cross-reference listings
Assist other employees in selecting and/or locating files
Charge and discharge files and materials from files to employees

Typing (T) and Word Processing (W)

T
Operate a typewriter
Proofread copy
Type memos, business letters, manuscripts, reports, proposals, etc.
Type and rule tabular materials (rows, figures, tables, columns, charts, etc.
Type outlines
Type information on printed forms
Type addresses on envelopes or cards
Type information on individual labels or continuous roll tape
Compose informal correspondence
Operate transcribing machine (dictaphone)
Transcribe from recorded document

W
Operate word processor
Determine type of format
Record document in form
Proofread, edit and/or revise document during playback
Make required copies for distribution/storage

Recordkeeping

Operate a calculator
Take inventory and record information on proper forms
Prepare delivery orders
Verify entries on purchase orders
Trace and route orders
Record daily shipments
Keep petty cash accounts
Maintain price lists and make necessary changes
Keep charts of sales records
Keep records of territory assigned to sales representatives
Verify amounts, dates, signitures on bills, invoices, money orders, checks
Compute sales tax
Send out credit memos for goods returned
Prepare purchase orders, invoices, vouchers, receipts, or saleslips
Prepare accounting data for transmittal to computer center

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Section IV

Basic Skill Tasks Linked to Clerk-Typist Tasks

Job-Related Reading

Related Terminology

Basic reading skills: (occupationally oriented)	Essential reading skills needed to secure and maintain employment.
Reading taxonomy:	Classification system which identifies a heirarchy of reading skills stated in performance terms.
Job-related reading tasks:	Reading tasks performed in conjunction with occupational tasks.
Clerk-typist:	A worker who compiles data and operates a typewriter in performance of routine clerical duties such as maintaining business records and reports.
Entry-level clerk-typist:	A person entering the occupation of clerk-typist.
Occupation:	The overall category into which particular duties are categorized.
Duty:	A major category of work which consits of related tasks performed by a clerk-typist.
Task:	A measurable element of work usually performed by a single worker in a short span of time. Tasks are grouped into duty areas.
Task list: (clerk-typist)	A listing of the identified tasks performed by clerk-typists.
Competency:	The demonstrated ability to perform specific tasks.

Job-Related Reading

Reading involves developing some fundamental skills and applying them as needed; therefore, reading which is done in order to perform an occupational task requires mastering some basic reading skills and using them on the job. Recognition of both common and technical words and an understanding of their meanings is essential for various job tasks, from filing materials alphabetically to repairing a radio.

A 1980 report published by the Reading Research Center in Bloomington, Indiana, notes that most job-related reading requires reading to perform a specific job task, and that the task itself often provides "context clues" which help workers learn the information quickly, with a minimum of attention. The work setting may actually enable workers to read material they may not be able to read in another setting.[8]

Reading specialists categorize reading skills into three major areas: Perceptual, decoding, and comprehension skills. Each category is listed below.

Reading skills

1. Perceptual
   a. auditory
   b. visual
   c. motor

2. Decoding
   a. sight vocabulary
   b. structural analysis
   c. syllabication

3. Comprehension
   a. rate
   b. literal
   c. interpretive
   d. critical

Reading words, symbols, graphs, charts, drawings, etc. in order to do something involves the application of these three basic reading skills as "reading tasks." Job-related reading is often referred to in performance terms. In 1978, Thomas G. Sticht defined job-related reading as..... "reading to: (1) get a job, (2) learn a job, or (3) do a job..." The third category, "reading to do a job," is typically used by workers in occupations such as clerical, welding, electronic technology, carpentry, etc. These workers generally read job-related materials in order to find specific information that will help them accomplish a task at hand.[9]

8. Mikulecky, L. and Diehl, W., Job Literacy: A Study of Literacy Demands, Attitudes, and Strategies in a Cross-Section of Occupations. Bloomington, Indiana: The Reading Research Center, 1980.
9. Sticht, T. G. (ed.). Job-Related Reading Tasks: Teaching Marginally Literate Adults to Read, 1978.

A taxonomy which takes a job-related approach to basic reading skills by presenting them in performance terms is listed below. Correlated with the taxonomy are the three main categories of reading skills. Sub-categories are noted where the skills are not all inclusive.

Job-related reading task [10]	Reading skill
Read to: follow directions/instructions	1. perceptual 2. decoding 3. comprehension a. rate b. literal
find facts, figures, or specific information	(same as above)
understand the meaning of facts	(same as above)
determine the usefulness/ importance of information	1. perceptual 2. decoding 3. comprehension a. rate b. literal c. interpretive
relate information to another person	(same as above)
find mistakes/faults	(same as above)
retain information	1. perceptual 2. decoding 3. comprehension a. rate b. literal c. interpretive d. critical
analyze/solve problems	(same as above
understand concepts (concrete/abstract)	(same as above)
interpret writer's intent	(same as above)

10. Hammill, D. and McNutt, G., Correlates of Reading: The Consensus of Thirty Years of Correctional Research, PRO-ED Monograph #1, Austin, Texas, 1981.
Mikulecky, L. and Diehl, W., op. cit.

DISCUSSION OF THE DATA

Of the 89 clerk-typist tasks surveyed, preliminary results indicated that a total of 96% of the tasks performed by clerk-typists required some type of reading.

Figure R-1 presents a percentage breakdown of each type of reading involved in the perfomrance of clerk-typist tasks.

Figure R-2 presents a percentage breakdown of reading involved in each of the duty categories for the occupation of clerk-typist.

CLERK-TYPIST TASKS ANALYZED ACCORDING
TO PERCENTAGES OF EACH TYPE OF READING REQUIRED*

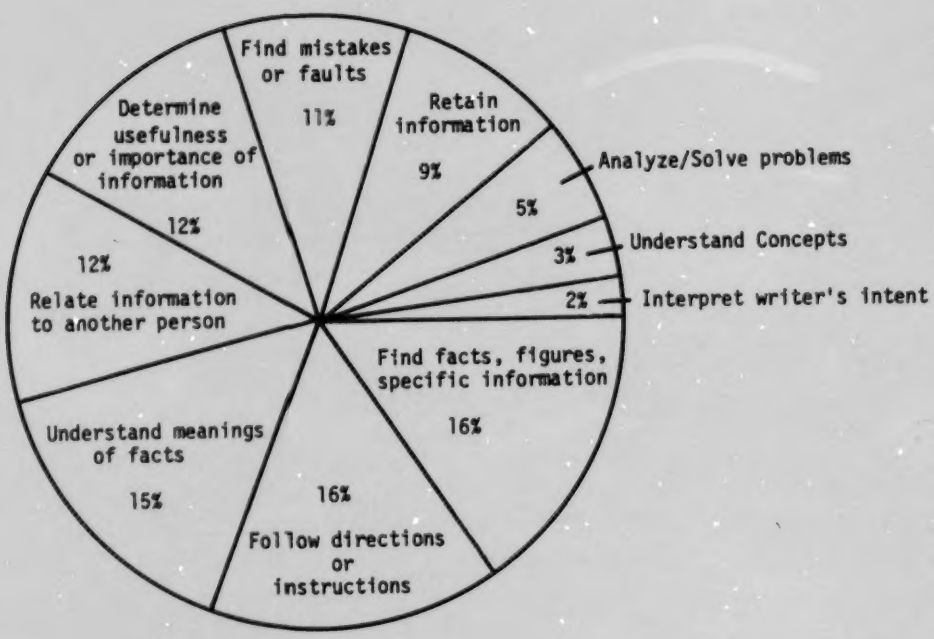

Figure R-1

Reading to follow directions or instructions and reading to find facts, figures, or specific information were found to be equally necessary kinds of reading for clerk-typists. Each comprised 16% of all reading required.

Understanding the meanings of facts followed as the type of reading which accounted for 15% of all job-related reading tasks. A total of 35% of the reading done by clerk-typists was almost evenly divided among the following: read to relate information to another person (12%); read to determine the importance or usefulness of information (12%); and read to find faults or mistakes (11%).

Less than 10% of the reading required of clerk-typists involved reading to relate information to another person (9%), and the remaining reading tasks comprised only 10% of all reading tasks performed by a clerk-typist: read to analyze or solve problems (5%), understand concepts (3%), and interpret writer's intent (2%).

40

*Percentages were rounded off

CLERK-TYPIST READING TASKS
ANALYZED ACCORDING TO DUTY CATEGORY*

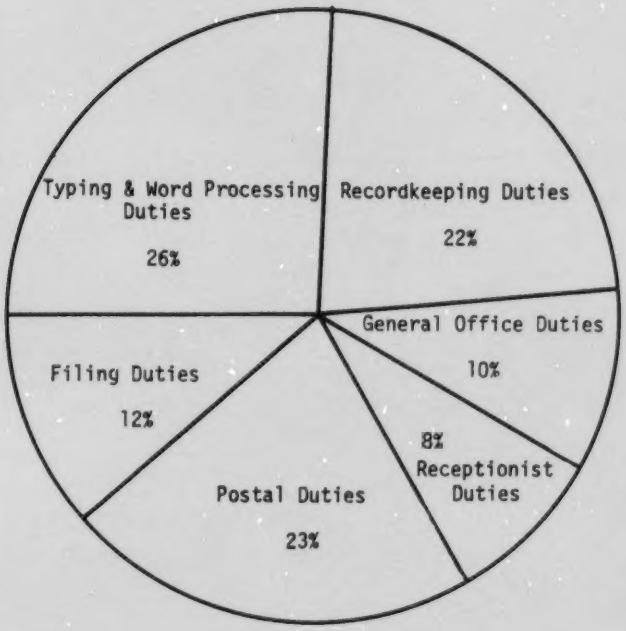

Figure R-2

According to data provided by respondents to the survey, almost two-thirds of the tasks requiring reading fall into the category of typing and word processing duties (26%), postal duties (23%), and recordkeeping duties (22%).

The remaining duty categories (filing, general office, and receptionist) made up just over a third of the types of clerk-typist tasks which required reading (12%, 10%, and 8%, respectively).

*Percentages were rounded off

CLERK-TYPIST TASKS
LINKED TO SPECIFIC APPLICATIONS OF
JOB-RELATED READING

In order to illustrate how reading is applied on the job, the following chart gives some examples of job-related reading performed by clerk-typists in each duty category:

General Office	Refer to: Operator's manuals, reference manuals dictionary, supply catalogs, employee and city directories, maps, price lists logs, records, etc. Note equipment and supply warning labels Check for accuracy of information on forms, correspondence, etc. Follow written instructions on forms, telephone memos, requisitions, notes, etc. Read information in supply catalog such as quantity, price, quality, etc.
Receptionist	Refer to : Company organizational chart, employee room number and telephone directory, telephone manuals and directories, index card files, telephone charge chart, etc. Compare telephone log with telephone bill Read appointment calendar for times and names of persons scheduled for appointments
Postal	Determine recipients of incoming mail not addressed to individual employees Check contents of packages with packing slip information Determine class and special instructions required for outgoing mail Refer to previous correspondence or information Read mailing lists Refer to appropriate reference materials: Charts, tables, directories, manuals, schedules, etc. Follow company guidelines for dissemination of incoming and outgoing mail Read weight of mail on postage scale Determine rates by reading: Instructions, contents, cost, urgency, weight, size, etc.

EXAMPLES OF MASTERY APPLICATION OF JOB-RELATED READING	
Follow written directions for sorting and filing materials Insert "out" sheet in alphabetical or numerical order Refer to previous correspondence or information in files Transfer records to inactive files or microfilm according to written instructions Use charts or lists for cross reference filing	Filing
Refer to: Manuals (reference, operator's policy, etc.) Proofread for: accuracy, clarity, grammar, appearance, spelling, etc Follow outling format and procedures Read written communication for special requirements	Typing and Word Processing
Refer to: Manuals, item and stock numbers, price lists, order forms, maps, salesperson lists, tax tables, invoices, receipts, credit memos, computer codes, charts, tables, etc. Read records for accuracy of transactions Read and verify amounts, dates, and signatures of financial transactions (purchase orders, vouchers, etc. Read charts, tables, and graphic presentations as necessary	Record Keeping

OCCUPATIONALLY SPECIFIC AND GENERAL INSTRUCTIONAL MATERIALS FOR TEACHING JOB-RELATED READING

Basic Skills in Reading series
Cebco Standard Publishing, 1980.
Understanding instructions
Understanding forms
Undersanding announcements and messages
Understanding travel information

Basic Vocabulary Builder, Erlich & Murphy
McGraw-Hill Book Co., 1975.
Alphabetical listing of general vocabulary words including: pronunciations, definitions, derivations, examples

Career Communications series, Brown
Bobbs-Merrill Publishing, 1980.
Reading, writing, and speaking as used in career-related courses

Content Area Reading Skills: Reference
EDL/McGraw Hill, 1978.
Levels C through I
Includes curricula such as: Using a table of contents, using alphabetical order, reading maps, using a diagram, using a glossary, using a dictionary to find meanings of words, using an index, using a pronunciation key, using a bibliography, using footnotes, using parts of a book, etc.

Developing Skills in Critical Reading, Atwood
LEARNING Handbooks, 1975.
Various activities designed to develop critical reading of print, pictures, etc.

Dictionary of Accounting Terminology
South-Western Publishing Company, 1980.
Contains definitions for all words which appear in italics in Century 21 Accounting, 2nd edition

Essential Skills series
Jamestown Publishers, 1976.
Books 1 through 20
Comprehension categories include: subject matter, main idea, supporting details, conclusions, clarifying devices, vocabulary in context

From Pictures to Passages, Evanson
Contemporary Books, Inc., 1978.
Includes sections on following directions, drawing conclusions, finding the main idea and supporting details, following sequences, etc.

Gaining Word Power, Rubin
Macmillan Publishers, 1978.
vocabulary (general)

Introduction to Word Processing, Mason
Bobbs-Merrill Publishing, 1981.
Includes vocabulary building sections and definitions of word processing terminology

INSTRUCTIONAL MATERIALS FOR JOB-RELATED READING, Continued

Office Occupations, Pre-vocational series programmed instruction
Litton Instructional Materials, Inc. 1966.

On The Job, Wm. O'Rourke, ed.
Vintage Books, 1977.
An anthology of fiction containing stories about working in America

Pre-GED Basic Skills Series of Basic Reading Skills, Aliyah Abdul Karim
McGraw-Hill Book Company, 1981.
GED preparatory reading. Includes areas such as following directions, finding information in the library, finding a job, etc.

Reading By Doing, Simmons & Palmer
National Textbook Company, 1981.
Includes finding facts and details, establishing order or sequence, finding expressed main ideas, finding metaphoric meaning, reading for implied main ideas.

Reading Competence, Royce & Reiter
Cambridge Book Company, 1977.
Based upon performance objectives in reading

Reading IV, A Teacher Duplicator Master Book
VMI Basic Skills & Concepts Library, 1973.
Based upon performance objectives in reading

Read to Succeed, Bracy & McClintock
McGraw-Hill Book Company, 1980.
Word attack & spelling skills, dictionary skills, comprehension skills, vocabulary skills, and study skills.

Real Life Reading and Writing on the Job
Scholastic Books, 1980.
self-paced instruction

Real Stories series, Katz, Chakeres, & Bromberg
Globe Book Company, 1975.
Stories adapted from newspaper and magazine articles for low-level readers

Safety and Health for Business and Office Education, an instructor resource guide
Center for Occupational Research & Development, Waco, Texas, 1981.
Occupationally specific modules to be read by students or taught by instructors

Six-Way Paragraphs, Pauk
Jamestown Publishers, 1974.
Levels F through M
Comprehension categories include: subject matter, main idea, supporting details, conclusions, clarifying devices, vocabulary in context.

Solving Life Problems in Occupational Knowlege, Cook
McGraw-Hill, 1980.
Levels 1, 2, & 3 (Job-related general)

Specific Skills Series
Barnell-Loft, Ltd., 1976.
Levels C through I
Working with sounds, following directions, using the context, locating the answer, getting the facts, drawing conclusions, getting the main idea, detecting sequence.

Strategies for Reading, Robinson, Anderson, Hittleman, Patterson, & Paulsen
Allyn & Bacon, Inc., 1978.
Strategies for reading sentences, words in context, paragraphs, and long selections.

Vocabulary IV, a teacher super duplicator masterbook in language arts
VMI Basic Skills and Concepts Library, 1980.
Sounds, roots, prefixes, suffixes, using reference books

Word Processing Concepts, Casady
South-Western Publishing Co., 1980.
text

Write and Read series, Dawkins
EDL/McGraw Hill
Combines reading directions and following them by writing

Working With Words, Putnam
Steck-Vaughn, 1980.
Letter, word, and sentence patterns

Job-Related Mathematics

Related Terminology

Basic mathematics skills: (occupationally oriented)	Essential math skills needed to secure and maintain employment.
Math taxonomy:	Classification system which identifies a heirarchy of math skills stated in performance terms.
Job-related math tasks:	Math tasks performed in conjunction with occupational tasks.
Clerk-typist:	A worker who compiles data and operates a typewriter in performance of routine clerical duties such as maintaining business records and reports.
Entry-level clerk-typist:	A person entering the occupation of clerk-typist.
Occupation:	The overall category into which particular duties are categorized.
Duty:	A major category of work which consists of related tasks performed by clerk-typists.
Task:	A measurable element of work usually performed by a single worker in a short span of time. Tasks are grouped into duty areas.
Clerk-typist task list:	A listing of the identified tasks performed by entry-level clerk-typists.
Competency:	The demonstrated ability to perform specific tasks.

Job-Related Mathematics

Many occupations require the application of basic mathematics skills for success on the job. The ability to apply basic math skills in work settings can be extremely important. In some instances, errors in simple skills such as adding and subtracting may even result in the loss of a job. A clerical worker may be required to figure employee taxes or social security deductions accurately; a salesperson may need to conduct inventories; a carpenter measures distance and temperature in order to build a house.

Linkage of specific basic mathematics skills to specific occupational tasks has not yet occured. Thomas Long, in a review of vocational education literature, states that "There is a paucity of rigorously defined data which document the critical relationships between specific mathematics skills and specific occupations."[11] Another study, by Long and Herr (1973), suggests that while mathematics teachers seem to know the levels of mathematics required of mathematically-oriented professionals, the math requirements for the crafts and skilled trades have been much more difficult to ascertain.[12]

The seven categories of basic mathematics skills that are taught in most fundamental mathematics classes are listed below.

Mathematics skills

1. Quantification(counting and sequencing numbers)
2. Computation (adding, subtracting, multiplying, dividing)
3. Measurement (including estimating and converting)
4. Interpretation and Construction of Drawings and Visual Presentations of Numbers (graphs, tables, schematic drawings, etc.)
5. Ability to Comprehend and Solve Word Problems
6. Ability to Comprehend and Solve Algebra Problems
7. Ability to Comprehend and Solve Geometry Problems

11. Long, Thomas E., Basic Mathematics Skills and Vocational Education. Columbus, Ohio: Ohio State University, National Center for Research in Vocational Education, 1980.
12. Long, T.E., & Herr, E.L. "Teacher Perceptions of Basic Mathematics Skill Needs in Secondary Vocational Education." The Mathematics Teacher, 1973.

The following job-related math tasks are derived from the seven basic mathematics skills and converted into a taxonomy which uses a job-related approach:

Job-related Math Task	Math skill
COUNT OR PUT IN ORDER: (verbally or in writing) a. whole numbers b. fractions c. mixed numbers d. decimals (other than money) e. money f. percents g. calendar dates	1. Quantification
COMPUTE: (add, subtract, multiply, divide) a. whole numbers b. fractions c. mixed numbers d. decimals (other than money) e. money f. percents g. distance of lines h. area i. volume j. weight k. force l. time m. rate (speed) n. temperature o. cost p. ratio q. proportion	2. Computation
MAKE ESTIMATES, MEASURE WITH STANDARD SYSTEM OF MEASUREMENT: (English system) a. distance b. weight c. temperature (farenheit) d. capacity (pints, quarts, etc.)	3. Measurement
CHANGE FROM ONE SYSTEM OF MEASUREMENT TO ANOTHER: a. percents to fractions b. fractions to decimals c. decimals to percents d. English to metric (distance, weight, capacity) e. temperature (farenheit to celcius)	Measurement
INTERPRET, CONSTRUCT PRESENTATIONS OF NUMBERS: a. graphs b. scedules	4. Interpretation and Construction of Drawings & Visual Presentations of Numbers
CONSTRUCT, SOLVE WORD PROBLEMS a. story problems	5. Ability to Comprehend and Solve Word Problems
SOLVE ALGEBRA PROBLEMS: a. using letters as symbols b. using specific formulas	6. Ability to Comprehend and Solve Algebra Problems
USE FORMULAS TO EXAMINE GEOMETRIC FORMS AND SHAPES: a. flat shapes b. three-dimensional forms	7. Ability to Comprehend and Solve Geometry Problems
INTERPRET, CONSTRUCT DRAWINGS: a. scale drawings b. assembly drawings c. schematic drawings d. shop drawings	4. Interpretation and Construction of Drawings & Visual Presentations of Numbers

DISCUSSION OF THE DATA

Of the 89 occupational tasks listed in the clerk-typist survey, preliminary results indicated that a total of 82% of those tasks required some type of math task. The following figures present data indicated percentage breakdowns of the math required of clerk-typists in relation to the job-related taxonomy, math concepts, and duty categories of occupational tasks.

CLERK-TYPIST MATH ANALYZED
ACCORDING TO CATEGORIES OF MATH TASKS*

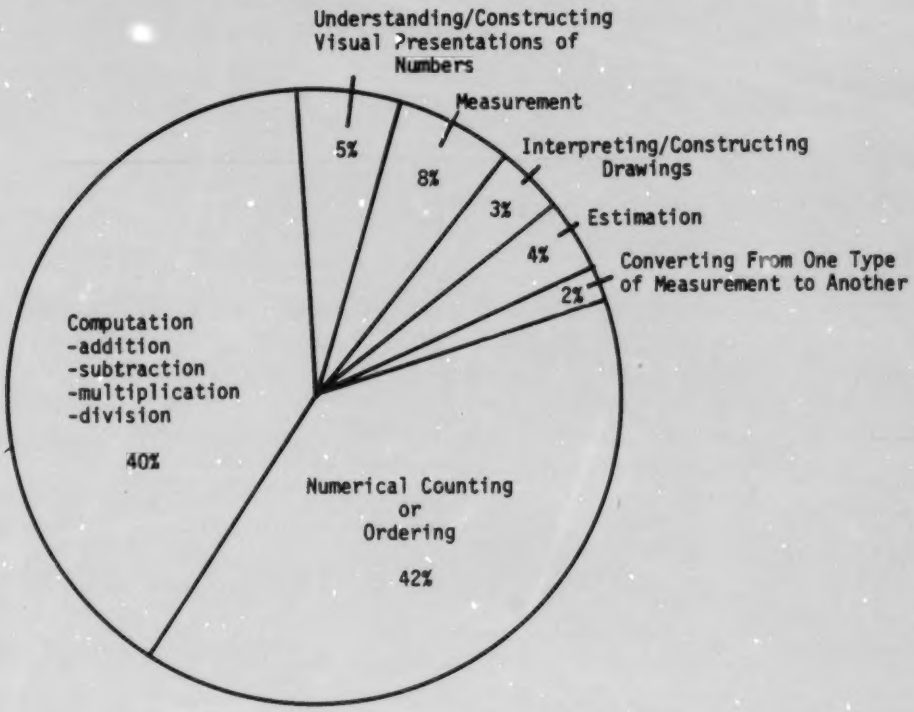

Figure M-1

The tentative data indicated that nearly half of the mathematics performed by entry-level clerk-typists were very basic. Counting or ordering comprised 42% of all the job-related math required of a clerk-typist.

Computation (addition, subtraction, multiplication, and division) made up another 40% of all the job-related math required of clerk-typists.

Measurement was the next most frequently used math task. The preliminary results indicated that 8% of all clerk-typist math was of this type. Understanding or constructing visual presentations of numbers and estimation represented another 5% and 4% (respectively) of the math tasks clerk-typists perform.

Three percent of the remaining math tasks were interpreting or constructing drawings, and 2% were converting from one type of measurement to another.

56

*Percentages were rounded off

CLERK-TYPIST MATH ANALYZED
ACCORDING TO CONCEPTS REQUIRED*

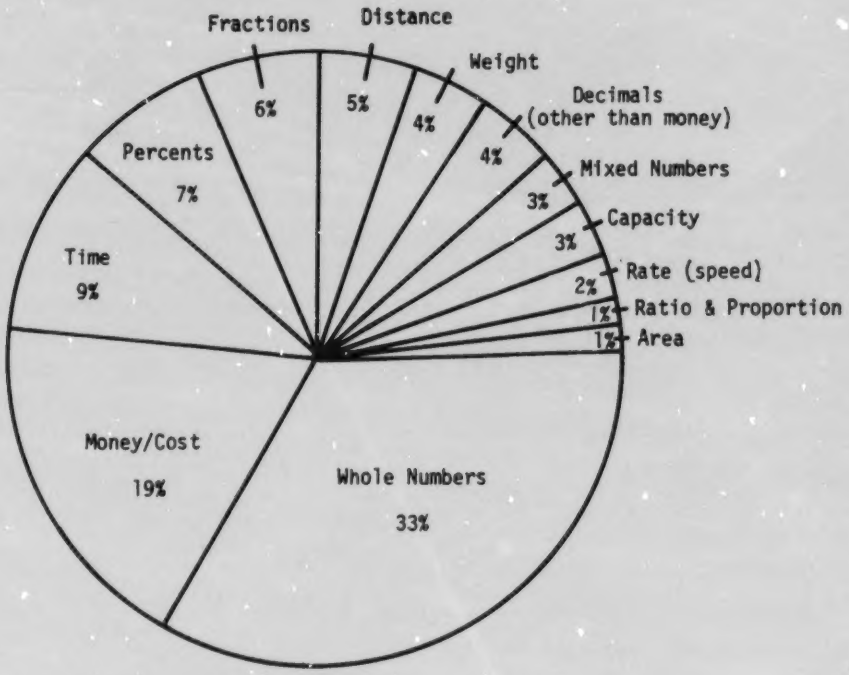

Figure M-2

Over one-half of the math associated with clerk-typist tasks involved the concepts of whole numbers, money, and cost. One-third involved the use of whole numbers. Tasks dealing with money or cost comprised 19% of the math tasks.

The next most frequently used concept appeared to be that of time. Nine percent of all clerk-typist math dealt with time.

The remaining clerk-typist math tasks involved ten additional concepts, each of which represented less than 8% of the total math tasks: percents, fractions, distance, weight, decimals (other than money), mixed numbers, capacity, rate, area, ratio, and proportion.

As the graph indicates, rate, area, ratio, and proportion each represented only 1% of the total math requirements for clerk-typists.

57

*Percentages were rounded off

CLERK-TYPIST MATH TASKS
ANALYZED ACCORDING TO DUTY CATEGORY*

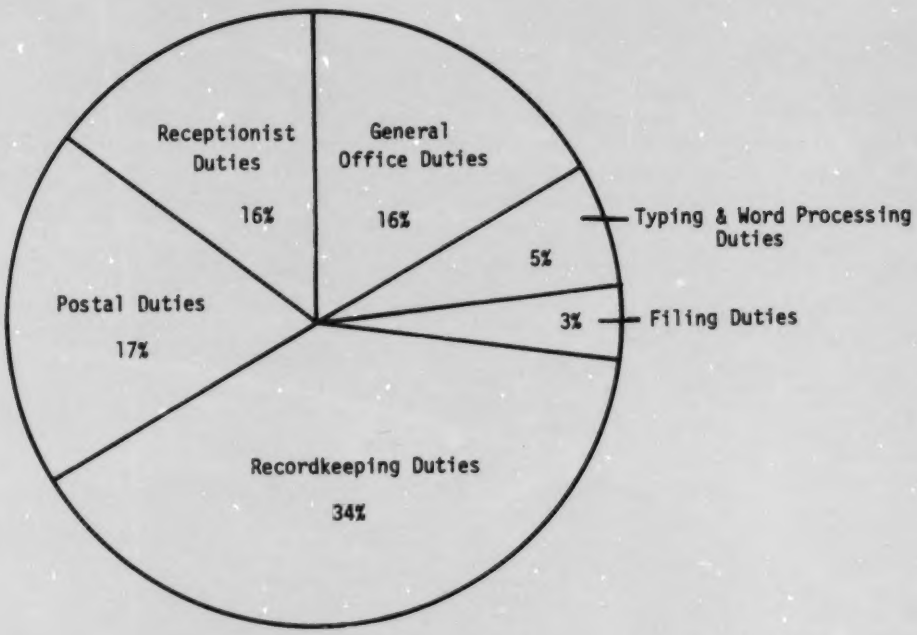

Figure M-3

Just over one-third (34%) of the tasks requiring math fell into the recordkeeping category.

A total of 50% of the math required of clerk-typists was evenly divided among postal, receptionist, and general office duties. Postal duties required 17%; receptionist and general office each required 16%.

Less than 10% of the math necessary for clerk-typists fell into the categories of typing/word processing and filing. They required 5% and 3% respectively of the total clerk-typist math.

58

*Percentages were rounded off

The following is a more detailed breakdown of math tasks the advisory group indicated were linked to clerk-typist tasks.

PERCENTAGES OF CLERK-TYPIST TASKS
LINKED TO MATH TASKS

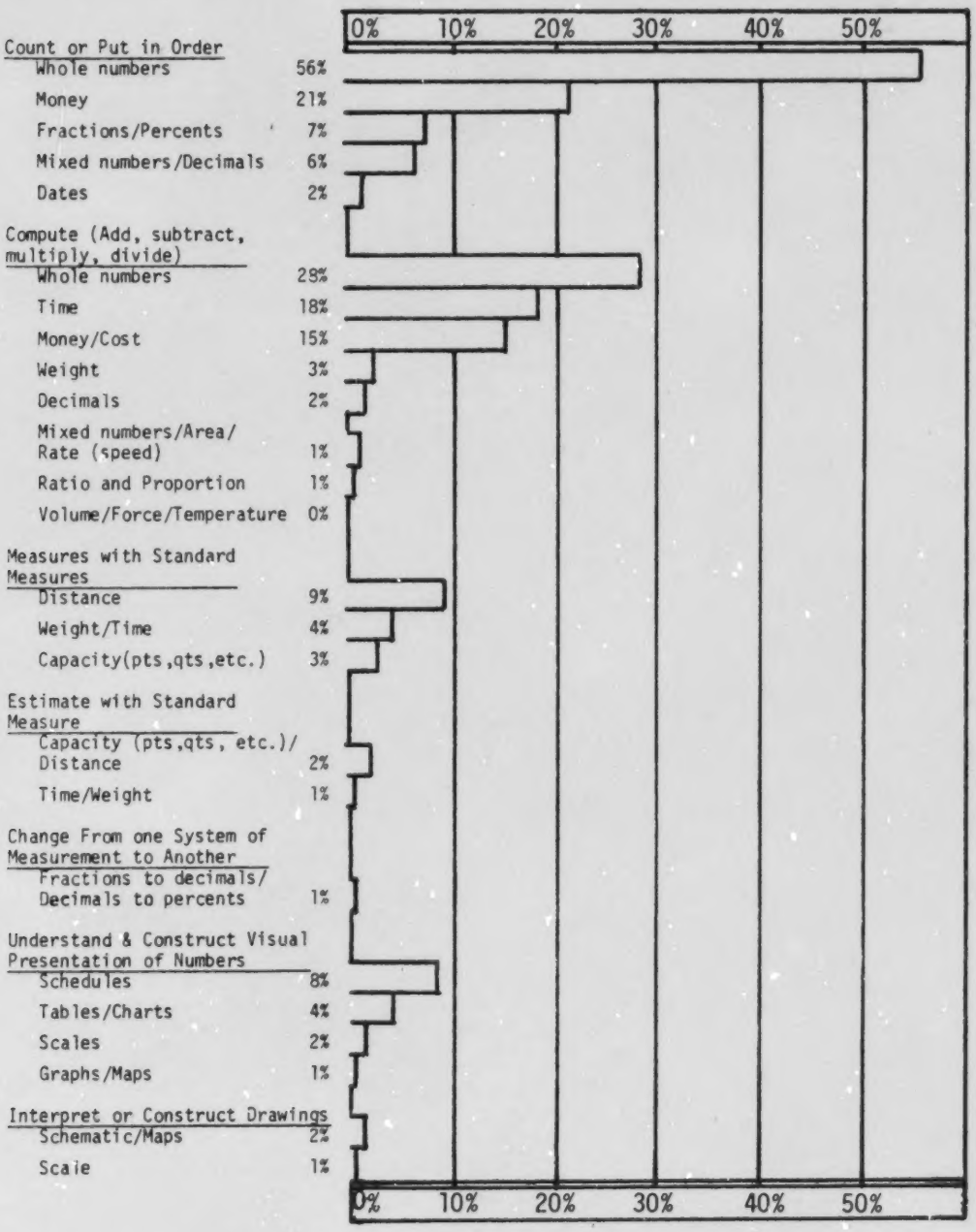

Figure M-4

CLERK-TYPIST TASKS
LINKED TO SPECIFIC APPLICATIONS
OF JOB-RELATED MATH

In order to illustrate how math is applied on the job, the following chart gives some examples of job-related math performed by clerk-typists in each duty category.

General Office	Count office supplies used in order to record on inventory sheet Compute and record miles when traveling to suppliers, post office, etc. Compute total cost of item (such as flowers, cards, etc.) to be bought by employees and compute each person's share Compute delivery time, prices, taxes, and discounts on supply items Assess capacity of bottles, cans, and cartons of refreshments and other supplies Read schematic drawing when there are problems with copy or other machines Adjust holes on paper punch to appropriate distances based on numbered calibrations Compute total number of copies made Compute cost of duplicating
Receptionist	Count or put in order date, time, office room numbers, etc. Estimate approximate distance to another office or department Understand drawing of building or office floor plan Use chart or office schedule to determine whether employer/employees are present Use chart with office numbers and phone numbers to route calls Estimate length of long distance calls Refer to table of long distance rates Understand and use area code map on telephone book Estimate time employer will return Give out address and telephone numbers correctly Count number of words sent in telegram or cablegram
Typing and Word Processing	Calculate width of margins Set tabs as needed Choose single space/double space, etc. Read for accuracy of numbers, graphs, schedules, tables scales, charts

EXAMPLES OF SPECIFIC APPLICATION OF JOB-RELATED MATH	CATEGORIES OF OCCUPATIONAL TASKS
Estimate space from bottom of page	Cont.
Find center of paper for headings, dates, etc.	
Understand or construct graphs indicating sales, etc.	
Use Roman numerals appropriately in typing outlines	
Adjust transcribing machine for volume , speed, tone, etc. according to numbers	
Compute mailing costs (rate per ounce, etc.)	Postal
Compute daily or weekly amount on postage meter	
Estimate the time which lost correspondence has been missing	
Count number of enclosures in letters	
Determine number of items that can be stuffed or bundled	
Estimate size of article to be wrapped and size of wrapping paper needed	
Choose correct number and types of stamps	
Set postage meter machine at appropriate numbers	
Estimate time from mail pick-up schedule	
Schedule shipment and/or delivery	
Read chart/table which list cost and weight	
Estimate when freight will be delivered	
Determine number of labels and files needed	Filing
Note times/dates when files are checked out	
Note date so that files can be transfered to inactive file cabinets	
Count items in inventory	Record Keeping
Compute inventoried totals	
Estimate fractional values of supplies	
Compute price, tax, delivery cost, etc.	
Estimate distance and time needed for delivery	
Count or put in order purchase orders	
Pay incidental amounts from petty cash fund	
Replenish petty cash fund	
Understand/construct maps of sales territories	
Compute cost/rate per word	
Compute time zone changes	
Estimate time telegram or cablegram will be delivered	
Estimate time needed for meetings, appointments, lunch, and travel to and from appointments, etc.	
Note dates on notices posted and keep them current	

OCCUPATIONALLY SPECIFIC AND GENERAL INSTRUCTIONAL MATERIALS FOR TEACHING JOB-RELATED MATHEMATICS

Office Skills 1: Language and Math Practice, Morrison.
Gregg Division/McGraw-Hill Book Company, 1978.
Workbook provides drills to build number concept skills. Presented as it relates to a job in business.

Mathematics for Technical and Vocational Students, Boyce, Margolis, & Slade.
John Wiley & Sons, 1982.
Metric system, common fractions, decimals, fractions, percentages, ratio & proportion; practical algebra, geometry, graphs, logarithms, and essentials of trigonometry.

Reaching Math Competence, Chant, Montalto, & Eufinger.
Globe Book Company, Inc., 1981.
Provides skill checks and reviews for students.

Arithmetic for Careers, Brown.
Delmar Publishers, 1980.
Arithmetic concepts applied to vocational fields and everyday life.

Mathematics Skill Booklets, Shea.
Steck-Vaughn, 1978.
Books 5500, 6600, 7700--Whole numbers, fractions, decimals, percents.

Working With Numbers (revised), Shea.
Steck-Vaughn, 1980.
Whole numbers, fractions, decimals, percents; problems with formulas ratio & proportion, and simple equations.

Business Math and Electronic Calculators, White & Merchant.
Washington State Commission for Vocational Education, Olympia, WA, 1976.

Coordinated Vocational Education and Training: Math (revised), Spann.
State Department of Vocational and Technical Education, Stillwater, Oklahoma.
Measurement, whole numbers, fractions, decimals, percents, consumer education, and geometry.

Applied Math Problems in Clerical, Swearingen.
Oregon Vo-Tech Mathematics Problems Sets, 1974.
Individualized learning system which deals with problems with whole numbers, fractions, decimals, measurement, simple equations, graphs.

Working with Math, Sushok & Shapiro.
State of New Jersey Department of Education, 1976.
Laboratory approach to teaching math to students in vocational programs who are non-readers. Includes student job sheets.

Introduction to Metrics, Edgecomb & Shapiro.
Vocational Technical Curriculum Lab, Rutgers State Manual.
Intended to teach technical students to "think metric" in relation to distances, volumes, weights, etc.

Business Mathematics, Eighth edition, Rosenberg, Lewis & Poe.
Gregg, 1980.
No description available.

Math for Business Careers, Huffman, Twiss, & Williams.
Gregg, 1980.
Intended to develop computational skills needed for entry-level jobs in various business careers.

Business Math/30, Rosenberg and Alvey.
Gregg Division, McGraw-Hill, 1976.
A thirty unit text-workbook for office occupations.

Vocational Mathematics for Business, Second edition, Martinka.
South-western, 1980.
No description available.

Business Mathematics, Olsen & Haber.
Bobbs-Merrill Publishing, 1980.
Designed for use in a first business math course. Includes metrics, percentages, interest, etc.

Math Applied to Career Highlights(MATCH).
Learning Achievement Corp., Gregg/McGraw Hill, 1981.
Five workbooks relating basic math concepts to the real world of jobs and careers.

Plan Consumer, Applied and Business Math.
Career Publishing, 1980.
A chapter on mailing and shipping, and another chapter which includes word problems and banking.

Business Math for Everyday Life.
Clemson Press, 1979.
Mathematics concepts related to office work, wages, and metrics.

Business Math and Calculating Machines, Philips and Sorey.
Macmillan Publishing Company, Inc.
Routine business mathematics problems intended to reinforce fundamental math principles.

Job-Related Writing

Related Terminology

Basic writing skills: (occupationally oriented)	Essential writing skills needed to secure and maintain employment.
Writing taxonomy:	Classification system which identifies a heirarchy of writing skills stated in performance terms.
Job-related writing tasks:	Writing tasks performed in conjunction with occupational tasks.
Clerk-typist:	A worker who compiles data and operates a typewriter in performance of routine clerical duties such as maintaining business records and reports.
Entry-level clerk-typist:	A person entering the occupation of clerk-typist.
Occupation:	The overall category into which particular duties are catagorized.
Duty:	A major category of work which consists of related tasks performed by clerk-typists.
Task:	A measurable element of work usually performed by a single worker in a short span of time. Tasks are grouped into duty areas.
Clerk-typist task list:	A listing of the identified tasks performed by entry-level clerk-typists.
Competency:	The demonstrated ability to perform specific tasks.

Job-Related Writing

The ability to convey a message in writing is required in varying degrees on the job. For most workers, job-related writing consists of filling out forms or writing brief inter-office correspondence. This may seem minimal; however, according to a 1980 report by Mikulecky and Deihl, 65% of all job-related writing is performed daily.[13]

Legible handwriting, correct spelling, proper punctuation, and correct English usage require the knowlege of some basic writing skills that can be catagorized into three areas: Mechanics, usage, and composition. Each category includes some specific skills which must be mastered in order to express facts or ideas in writing. These skills are outlined below:

Writing skills

1. Mechanics
   alphabetization, penmanship, spelling, capitalization, and punctuation
2. Usage
   standard English grammar and diction
3. Composition
   phrases, sentences, paragraphs, passages

Written communication may be a necessary component of an occupational task, or it may be the task itself. For instance, writing a memo is both an occupational task and a writing task. All job-related writing consists of applying writing skills to job tasks.

A taxonomy which takes a job-related approach to basic writing skills and expresses them in performance terms is listed on the following page. Correlated with the taxonomy are the three main categories of writing (mechanics, usage, and composition.)

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13. Mikuleckey, L. and Deihl, W., Job Literacy: A Study of Literacy Demands, Attitudes, and Strategies in a Cross-Section of Occupations. Bloomington, Indiana: The Reading Research Center, 1980.

Job-related writing task[14]	Writing skill
Write to:	
form numbers and letters	1. Mechanics
produce legible material	Mechanics
spell correctly	Mechanics
capitalize appropriately	Mechanics
punctuate properly	Mechanics
use correct grammar and diction	2. Usage
compose phrases	3. Composition
compose complete sentences	Composition
organize and compose paragraphs	Composition
create memos, letters, & reports	Composition

14. Mickulecky, L. and Deihl, W., op. cit.

DISCUSSION OF THE DATA

Of the 89 occupational tasks listed in the clerk-typist survey, preliminary results indicated that a total of 70% of those tasks required some type of writing.

Figure W-1 presents a percentage breakdown of each type of writing involved in the performance of clerk-typist tasks.

Figure W-2 presents a percentage breakdown of writing required in each of the duty categories for the occupation of entry-level clerk-typist.

The figures are located on the following pages.

CLERK-TYPIST WRITING TASKS ANALYZED
ACCORDING TO PERCENTAGES OF EACH TYPE OF WRITING REQUIRED*

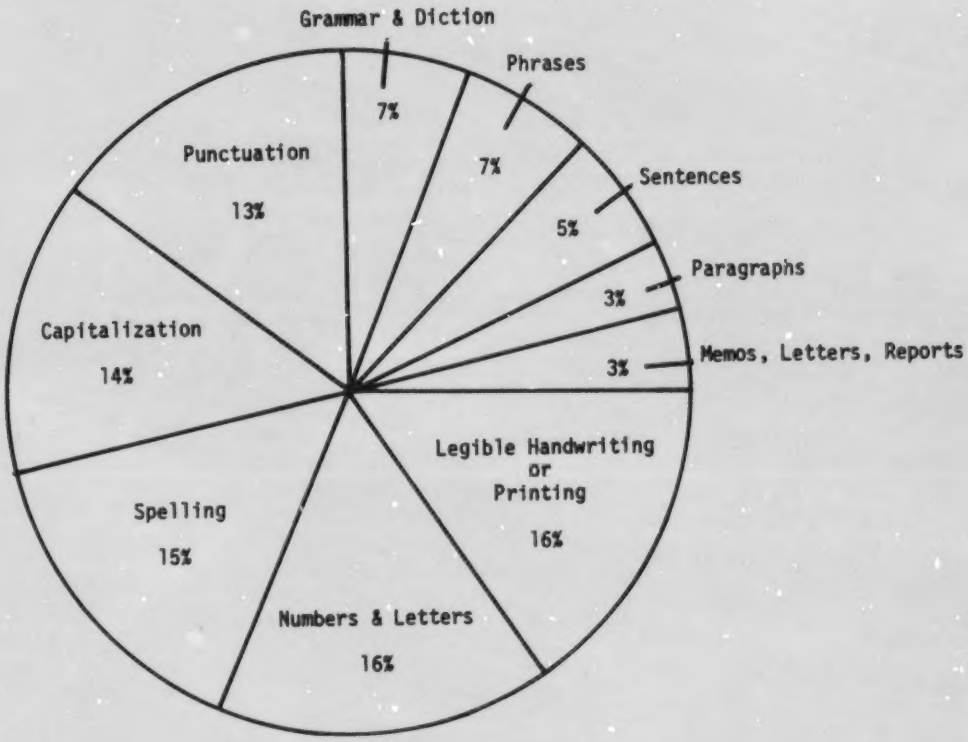

Figure W-1

Writing to form numbers and letters, and legibly printing or handwriting were equally necessary for clerk-typist task performance. (Each type comprised 16% of all job-related writing.)

Spelling, capitalization, and punctuation comprised 15%, 14%, and 13% (respectively) of all types of writing.

The five types of writing listed above accounted for almost three-fourths of all job-related writing required of clerk-typists. The remaining 25% included: Using proper grammar and diction (7%), composing phrases (7%), sentences (5%), paragraphs (3%), memos, letters, and reports (3%).

*Percentages were rounded off

CLERK-TYPIST WRITING TASKS
ANALYZED ACCORDING TO DUTY CATEGORY*

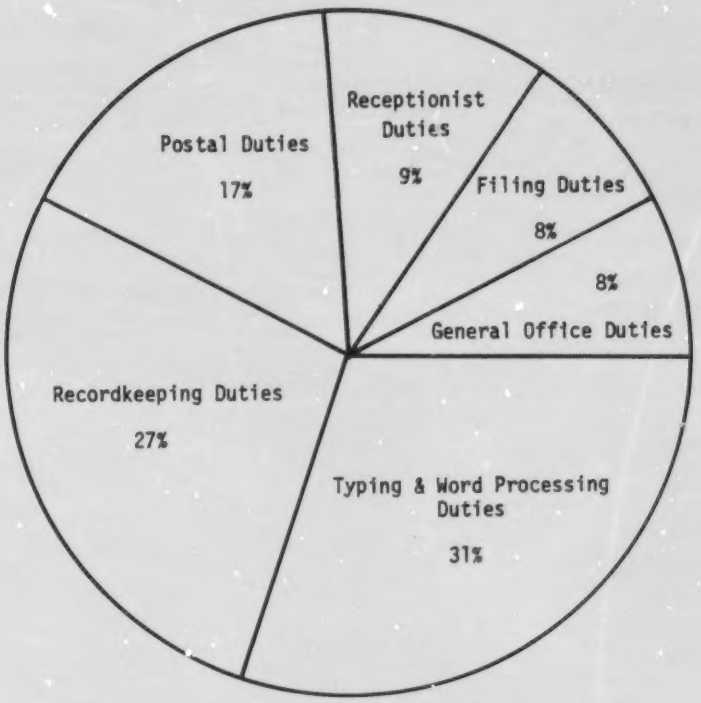

Figure W-2

According to preliminary data provided by respondents to the survey, almost a third (31%) of the tasks requiring writing fell into the category of typing and word processing. Writing tasks associated with recordkeeping duties comprised 27%, and those associated with postal duties, 17%.

Receptionist, filing, and general office tasks accounted for less than 20% of the tasks which require writing.

*Percentages were rounded off

CLERK-TYPIST TASKS
LINKED TO SPECIFIC APPLICATIONS
OF JOB-RELATED WRITING

In order to illustrate how writing is applied on the job, the following chart gives some examples of job-related writing performed by clerk-typists in each duty category.

General Office	Fill out appropriate forms as necessary Write notes to remember supplies needed Write notes to remember number of copies needed, paper color desired, grade of paper, etc. Write notes to employees as necessary Make notations of prices taken from catalogs and/or price lists Write messages clearly and concisely
Receptionist	Write name/room number of employee for visitors Record long distance calls Write any information relevant to telephone calls Take complete and accurate messages, including date, time, name of caller, telephone number, etc. Fill out appropriate forms (for telegrams and cablegrams etc.) Record scheduled appointments in appointment book Keep schedules updated Write messages clearly and concisely
Postal	Sign name on receipts, packing slips, invoices, etc. Make notes on incoming mail Complete forms such as shipping, postal, etc. Update lists as per instructions or updated directories Address packages manually Make notation of weight of mail Indicate any special mailing instructions in writing Record data such as amounts of postage used, etc. Schedule shipment and/or deliveries in writing

Type or print information on file folders or labels	Filing
Type or print information on index or rolodex cards	
Record dates/names of employees who check out files	
Make corrections and/or deletions on files	
Write notes pertaining to files to self or others	
Make corrections and/or deletions on rough draft	Typing and Word Processing
Express messages clearly and concisely	
Make notes pertaining to correspondence to self or others	
Edit copy for clarity, grammar, accuracy, and spelling	
Record information on appropriate forms (item, stock numbers, prices, etc.	Record Keeping
Write correspondence requesting information	
Record information concerning shipments received or delivered (date, time, vendor, etc.)	
Record and itemize cash disbursements	
Record sales information on charts	
Record transactions by date, salesperson, item, etc.	
Record computer codes on proper forms	

OCCUPATIONALLY SPECIFIC AND GENERAL INSTRUCTIONAL MATERIALS FOR TEACHING JOB-RELATED WRITING

Basic English for Business Communication, Bryant, Newhouse, & Handy
Fearon-Pitman Publishers, 1978.
Spelling, capitalization, punctuation, usage, sentences, paragraphs, letters, memos, & reports.

Business English and Communication, Stewart, Lanham, Zimmer,Clark, & Stead
Gregg Division/McGraw-Hill Book Co., 1928.
Spelling, capitalization, punctuation, usage, sentences, letters memos, reports.

Business Communications, Napier
Instructional Materials Laboratory,
Spelling, capitalization, punctuation, usage, sentences, paragraphs, letters, memos, reports.

Business Communications Skills Learning Activity Packages, Brouillet, State Superintendent of Public Instruction, Olympia, Washington, 1975.
Spelling, capitalization, punctuation, usage, sentences, paragraphs, letters, memos, reports.

Business English: A Communications Approach, Burnett & Dollar
Allyn and Bacon, Inc., 1979.
Spelling, punctuation, usage, sentences, paragraphs, letters, memos, reports. (A section on Word Processing included).

Business English: A Modern Approach, De Caprio
ITT Educational Services, 1973.
Capitalization, punctuation, usage.

Developing Proofreading Skill, Camp
Gregg Division/ McGraw-Hill, 1980

English For Careers, Smith
John Wiley & Sons, 1977.
Capitalization, punctuation, usage, sentences, letters, memos, (A Business vocabulary section included.)

English Ninety-three, Reynolds, Street, & Guillory
Laidlaw Brothers, 1980.
Spelling, capitalization, punctuation, usage, sentences, paragraphs, letters (personal and business).

Grammer II: A Teacher Super Duplicator Master Book in Language Arts, revised edition.
VMI Basic Skills & Concepts Library, 1980.
Usage

Handbook of Practical Writing, Butler
Gregg Division/McGraw-Hill Book Company, 1978.
Punctuation, usage, sentences, paragraphs, letters, memos.

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Help Yourself: A Guide to Writing and Rewriting, Mattson, Leshing, & Levi
Charles E. Merrill Publishing Company, 1979.
Punctuation, usage, sentences, paragraphs.

OCCUPATIONALLY SPECIFIC AND GENERAL INSTRUCTIONAL MATERIALS
FOR TEACHING JOB-RELATED WRITING,Continued

Office Skills 1: Language and Math Practice, Morrison
Gregg Division/MCGraw-Hill Book Company, 1978.
Usage, (Includes vocabulary section and section on Using the Dictionary).

Language Skill Books,
Steck-Vaughm Company, 1978.
Book 610: Capitalization, punctuation, sentences.
Book 830: Usage
Book 720: Usage (nouns, pronouns, verbs).
Book 940: Usage (adjectives, adverbs, prepositions, conjunctions, synonyms, antonyms, homonyns, interjections).

Learning How to Use the Dictionary, McEvoy
The Macmillan Company, 1963
Alphabetizing, spelling. (A programmed booklet).

Lessons in Paragraphing, Allez & Dohan

Lessons in Proofreading: Capitalization and Punctuation, Laubner

Lessons in Using Quotaion Marks, Sullivan

Lessons in Writing Sentences I & II, Woodruff
Curriculum Associates, 1978.
Capitalization, punctuation, sentences.

Paragraph Practice: Writing the Paragraph and the Short Composition, Sullivan
Macmillan Publishing Company, Inc., 1976.
Paragraphs, composition (general)

Skills & Drills, Levels A, B, & C
McDougal, Littell, 1978.
Spelling

Spelling Drills and Exercises: Programmed for the Typewriter, Brendel & Near
Gregg Division/McGraw-Hill Book Company, 1979.
Spelling, punctuation, usage, vocabulary, grammar, sentences.

Successful Business Writing, Sitzmann
National Tesybook Compnay, 1979.
Memos, letters, reports

Punctuation Drills and Exercises: Programmed for the Typewriter, Brendel & Near
Gregg Division/McGraw-Hill, 1978.
Punctuation

WEP--Writing, Editing, Polishing
Curriculum Associates, 1978

Write and Read, Dawkins
EDL/McGraw-Hill
DA-Usage, Sentences
EA-Usages, Punctuation, sentences, letters
FA-Usage, Capitalization, punctuation, sentences, paragraphs

Writing IV, A Teacher Super Duplicator Master Book in Languages Arts
VMI Basic Skills & Concepts Library
Sentences, paragraphs

Writing in an Age of Technology, Dakonis & Scally
Macmillan, 1978.
Sentences, paragraphs (Includes sections on general job-related writing).

Writing Sense: A Handbook of Composition, Pichaske
The Free Press, A Division of Macmillan Publishing Co., Inc., 1975.
Usage, punctuation, sentences, paragraphs (general composition and proofreader's marks included).

Writing Short Business Reports, Carr-Ruffino
Gregg Division/McGraw-Hill, 1980.
Sentences, paragraphs, reports

Writing Practical English, Wylder & Johnson
Macmillan Publishing Co., 1966.
Sentences, paragraphs, reports

Writing Practical English, Wylder & Johnson
Sentences, paragraphs, letters, memos, reports (includes section on filling out forms and appendexes which cover legibility, spelling, usage, punctuation, outlines, vocabulary, grammar & diction).

Write To Succeed, Books 1 and 2
EDL McGraw-Hill
Spelling, capitalization, punctuation, usage, letters, memos.

Manuscripts
Wisconsin Vocational Studies Center, 1978
Reports, manuscripts (production from rough draft to final draft).

Spelling, Word Division and Grammar
Wisconsin Vocational Studies Center, 1978
Spelling, usage

Writing Business Letters and Reports, Mansfield & Bahniuk
Bobbs-Merrill Educational Publishing, 1980.
Memos, letters, reports

English Style Skills-Builders, Cleary & Lacombe
Gregg Division/McGraw-Hill, 1980.
Spelling, punctuation, capitalization (includes module on proofreading).

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OCCUPATIONALLY SPECIFIC AND GENERAL INSTRUCTIONAL MATERIALS
FOR TEACHING JOB-RELATED WRITING, Continued

Business Spelling and Word Power, Lass
Bobbs-Merrill, 1961
Spelling (emphasizes basic business vocabulary and dictionary use).

Business English: A Work Text with Programmed Reinforcement, Slocum
Bobbs-Merrill, 1980
Usage, sentences (includes section with exercises in editing correspondence).

Word Studies, Lamb
South-Western Publishers, 1980.
Spelling, usage (includes pronunciation and dictionary usage).

Writing Business Letters
The BOE Instructional Materials Lab, Ohio State University, 1980.
Sentences, paragraphs, letters

How To Write Successful Business Letters, Riebel
Arco Publishing, 1980.
Paragraphs, letters (175 examples of actual letters included).

Business Reports,
Wisconsin Vocational Studies Center, 1978.
Reports (covers outlines, tabular columnar copy-boxed, ruled, & arranged).

English Usage Drills and Exercises, Programmed for the Typewriter, Brendel & Leffrugwell.
Gregg Division/McGraw-Hill, 1980.
Usage

Business English Essentials, Henderson & Voiles
Gregg Division/McGraw-Hill, 1980.
Spelling, capitalization, punctuation, usage, memos, letters, reports.

20,000 Words: Spelled and Divided for Quick Reference, Leslie
Gregg Division/McGraw-Hill, 1977.
Spelling (includes definitions).

A Modern Approach to Business Spelling, DeCaprio
Bobbs-Merrill, 1980
Spelling, punctuation, usage.

Applied Penmanship, Ferguson & Lyon
South-Western Publishing, 1980.
Legibility

Step-by-Step Guide to Correct English, Pulaski
Arco Publishing, 1980.
Usage

Spelling Your Way to Success, Mersand
Barron's Educational Series, Inc.
Spelling

Job-Related Listening and Speaking

Related Terminology

Basic listening and speaking skills: (occupationally oriented)	Essential listening and speaking skills needed to secure and maintain employment.
Listening taxonomy:	Classification system which identifies specific listening skills stated in performance terms.
Speaking taxonomy:	Classification system which identifies specific speaking skills stated in performance terms.
Job-related listening and speaking tasks:	Listening and speaking tasks performed in conjunction with occupational tasks.
Clerk-typist:	A worker who compiles data and operates a typewriter in performance of routine clerical duties such as maintaining business records and reports.
Entry-level clerk-typist:	A person entering the occupation of clerk-typist.
Occupation:	The overall category into which particular duties are catagorized.
Duty:	A major category of work which consists of related tasks performed by clerk-typists.
Task:	A measurable element of work usually performed by a single worker in a short span of time. Tasks are grouped into duty areas.
Competency:	The demonstrated ability to perform specific tasks.

Job-Related Listening and Speaking

Listening and speaking are a large part of job communications. Management personnel in industry have commented that, "Skill in effective communications is one of the most important abilities we look for in technically-trained employees."[14] Some examples of listening and speaking are: ordering supplies from a supply clerk, instructing another employee on the use of a machine, listening to a dictated letter on tape, listening to instructions, and requesting an item or supply.

Job-related listening and speaking skills are used between individuals and among groups. A recent Washington state study, however, concluded that listening and speaking to one person, face-to-face, was the most frequent type of communication used on the job.[15]

Non-verbal skills are often used in communicating at work as well. Facial expressions, gestures, and body posture are unspoken messages to others. For example, a receptionist's pleasant facial expression communicates a message to visitors; gesturing to a fellow employee can communicate a message to turn off a machine. These non-verbal messages are given with or without verbal communication. If they are used together with listening and speaking, they affect the message being communicated.

Equipment such as telephones, tape recorders, dictaphones, and loudspeakers also require skills in listening and speaking. Whether communicating one-to-one, in groups, or with the help of sound devices, communication at work often begins with listening comprehension.

Research indicates that there are three main categories of listening comprehension skills:[16]

Listening skills

1. Literal comprehension
   receiving an oral message

2. Interpretive comprehension
   making sense of or decoding the message received

3. Evaluative comprehension
   deciding on a response, if needed

14. U.S. Department of Health, Education, and Welfare, Occupational Communications Skills Analysis. Final report. Public Law 90-576, Washington State Commission for Vocational Education, 1976.
15. Frank H. Wimer, Communications Requirements for Technical Occupations. developed under contract with Everett H. Barton, Washington State Coordinating Council for Vocational Education, 1970.
16. Training Research and Development Station, Generic Skills Research and Development, Prince Albert, Saskatchewan, 1975.

These basic listening skills are often applied on the job in performing occupational tasks. All job-related listening tasks require all three basic listening skills. These listening skills are defined below in a taxonomy which is written in job-oriented, performance terms. Correlated with the taxonomy are the three basic categories of listening comprehension skills.

Job-related listening task[17]	Listening skill
Receive descriptions, reports, facts	1. Literal 2. Interpretive 3. Evaluative
Receive directions, orders, instructions	same as above
Receive questions, disagreements, disputes	same as above
Receive assurances, corrections, compliments, repremands	same as above
Receive opinions, suggestions, proposals, recommendations	same as above

After receiving an oral message and comprehending it, a worker may need to respond to it verbally. This response requires the basic skill of speaking. There are three main categories of speaking skills.

Speaking skills

1. Pronunciation
   articulating particular sounds

2. Grammar
   combining word forms (morphology) or combining words into phrases or sentences (syntax) according to prescribed rules

3. Diction
   choosing appropriate words and expressions (both general and technical) according to their actual meanings (denotation) as well as their implied meanings (connotation).

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17. Generic Skills Research and Development, op. cit.

These basic speaking skills are defined in terms of a taxonomy which is also written in job-related, performance terms. The three basic speaking skills are again correlated with the speaking tasks.

Job-related speaking task[18]	Speaking skill
Describe, report, specify	1. Pronunciation 2. Grammar 3. Diction
Direct, order, instruct	same as above
Question, express doubt, dispute	same as above
Explain, define, interpret	same as above
Evaluate, assure, correct, repremand	same as above
Advise, give opinion, propose, recommend	same as above

DISCUSSION OF THE DATA

Of the 89 occupational tasks listed in the clerk-typist survey, preliminary results indicated that 65% of those tasks required some type of speaking and 70% of the tasks required some type of listening. The figures on the following pages present percentage breakdowns of the data involving listening and speaking in relation to the job-related taxonomies and the categories of clerk-typist duties.

18. Generic Skills Research and Development, op. cit.

CLERK-TYPIST LISTENING TASKS
ANALYZED ACCORDING TO PERCENTAGES OF EACH TYPE OF LISTENING REQUIRED*

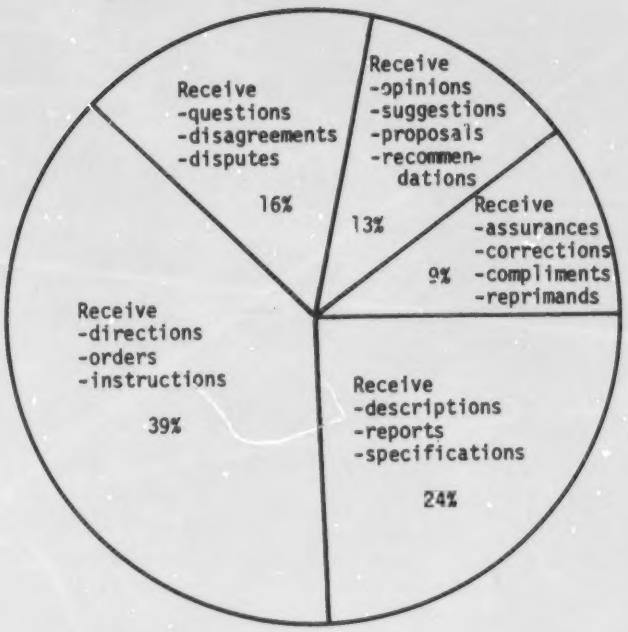

Figure L-1

The respondents indicated that nearly 40% of all clerk-typist listening was to receive directions, orders and instructions. Almost one-fourth (24%) of their listening was to receive descriptions, reports, and specifications.

Listening to receive questions, disagreements and disputes comprised 16% of the total listening . Thirteen percent of the listening done was to receive opinions, suggestions, proposals, and recommendations.

The type of listening used least frequently by clerk-typists was that of receiving assurances, corrections, complements, and reprimands which required only 9% of clerk-typist listening tasks.

CLERK-TYPIST LISTENING TASKS
ANALYZED ACCORDING TO DUTY CATEGORY*

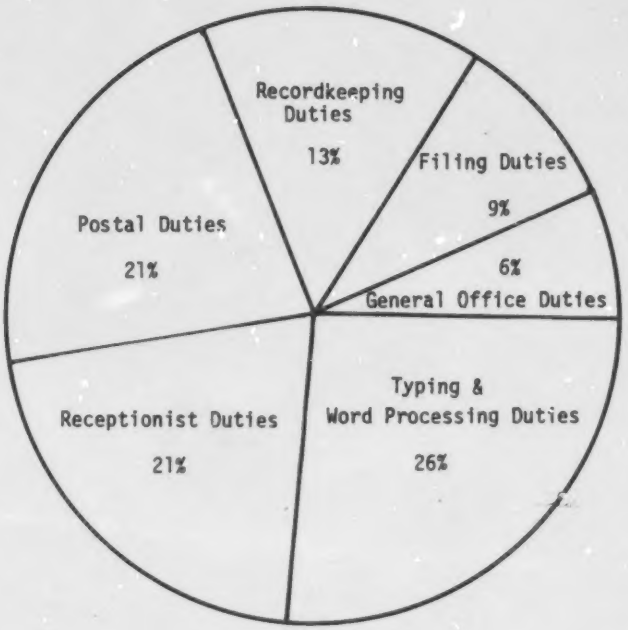

Figure L-2

Respondents indicated that typing and word processing tasks required the most (26%) of all job-related listening. Postal and receptionist tasks both required 13% or just half the listening required in the typing and word processing category. Filing and general office tasks required only 9% and 6% respectively of the listening performed by clerk-typists.

CLERK-TYPIST SPEAKING TASKS ANALYZED
ACCORDING TO PERCENTAGES OF EACH TYPE OF SPEAKING REQUIRED*

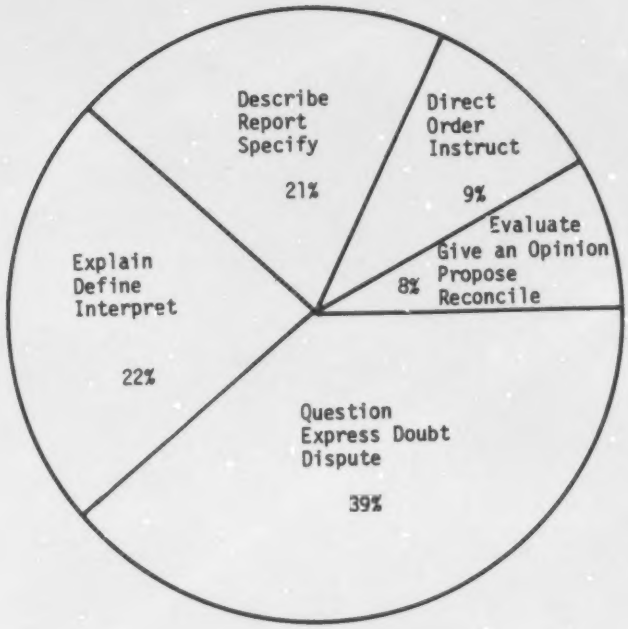

Figure S-1

Respondents indicated that almost 40% of the clerk-typist speaking was to question, express doubt, or dispute.

Explaining, defining, or interpreting comprised 22% of the speaking of clerk-typists. Describing, reporting, and specifying comprised an additional 21% of the speaking required.

The two final categories of speaking each comprised less than 10% of clerk-typist speaking. Directing, ordering, or instructing involved 9% of the speaking; evaluating, giving an opinion, proposing or reconciling comprised the final 8% of the total speaking that entry-level clerk-typists may do.

CLERK-TYPIST SPEAKING
ANALYZED ACCORDING TO DUTY CATEGORY*

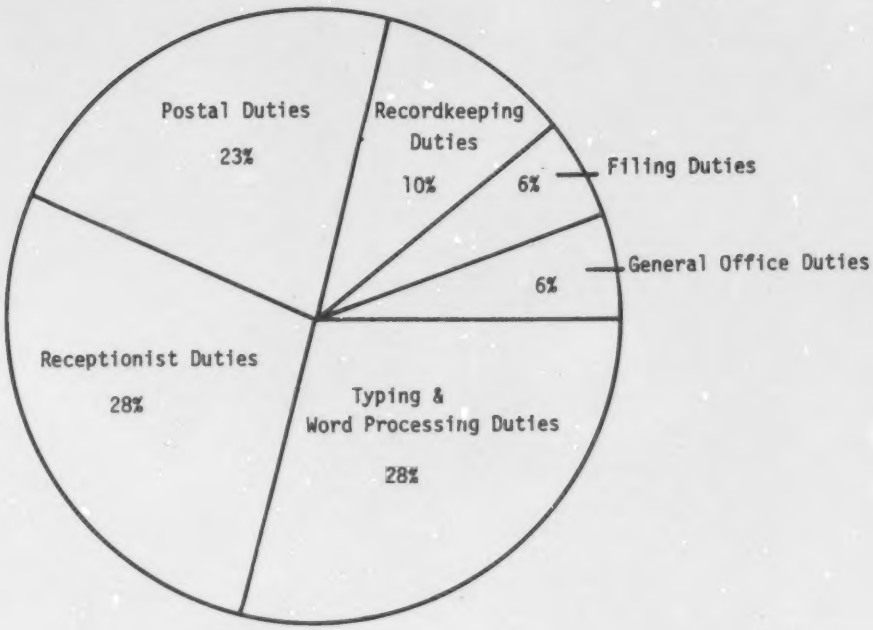

Figure S-2

Respondents indicated that receptionist and typing/word processing tasks required the highest percentage (28% each) of the speaking that entry-level clerk-typists do. Over one-half of clerk-typist speaking fell into those two duty categories. Postal tasks required the next highest percentage (23%) of speaking done on the job.

Recordkeeping tasks required only 10% of the speaking clerk-typists do. Filing and general office categories required the least amount of speaking with only 6% of the total speaking corresponding to each of those two categories.

CLERK-TYPIST TASKS
LINKED TO SPECIFIC APPLICATIONS
OF JOB-RELATED LISTENING AND SPEAKING

In order to illustrate how listening and speaking are applied on the job, the following chart gives some examples of job-related listening and speaking performed by clerk-typists in each duty category.

General Office	Listen to questions about deliveries Listen to a description or purpose for collecting money Listen to directions and specifications on ordering from employer Listen to vendor's questions Listen to directions and instructions as to number of copies to be made Listen to specifications and descriptions of any special copying procedures Listen to directions, orders and instructions as to how to collate and label materials
Receptionist	Listen to questions as to how to find a particular room or office Listen to instructions about items received which should be passed on to others Listen to descriptions of places, persons, or functions which visitors are seeking, but cannot give name of Listen to oral messages to be passed on to employer or employees Listen to questions as to availability, function, name, location, etc. of employer or other workers Listen to descriptions of long distance calls by employees Listen to descriptions from employer of notices that should be posted

EXAMPLES OF SPECIFIC APPLICATION OF JOB-RELATED LISTENING	
Receive instructions about which correspondence to open Receive questions from mail carrier as to addresses and names on letters Receive opinions, suggestions from post office workers as to when outgoing mail will be received Listen to employer's specifications regarding enclosures in letters	Postal
Listen to directions for setting up files Listen to employer/employee questions about location of files	Filing
Listen to suggestions as to how work should be typed Listen to coding designation Listen to dictaphone in order to transcribe	Typing and Word Processing
Receive directions on how to take inventory Listen to corrections on what has been done on inventory Receive instructions and descriptions of how orders should be prepared for delivery Listen to address changes, routing changes, etc. Receive directions and instructions for the preparation of purchase orders, vouchers, invoices, etc. Listen to descriptions of needs for and questions about petty cash	Record Keeping

The following chart gives some examples of job-related speaking related to each duty category.

[illegible]	[illegible] OF JOB-RELATED SPEAKING
General Office	Describe or specify what is being delivered Explain to employees the purpose for money collection Check understanding by re-wording (interpreting) instructions when necessary Describe or explain orders to vendor
Receptionist	Explain where a visitor should go Explain that employer or employee has left office specify return time etc. Direct visitors to appropriate location Recommend to visitiors that they wait, call back or talk to another person Introduce visitors to employer or appropriate employees Ask about a wrong number Explain that a caller has a wrong number Ask a caller's name and telephone number Propose and recommend an alternate time for a caller to telephone in order to reach employer or employee Ask for time and charges from the long distance operator Ask Information Operator for long distance numbers Repeat oral messages back to persons giving them Answer questions as to when caller can reach employer or employees Ask telegram or cablegram operator how many words for what cost Ask telegram or cablegram operator when cablegram or telegram will be delivered Ask to be sent a carbon copy of cablegram or telegram Ask to have cablegram or telegram repeated Explain that a call is being made to confirm an appointment Specify meeting time and place Ask for confirmation of appointment time and place

Ask mail carrier who must sign for registered mail Ask questions about where incoming mail should go Ask mailroom personnel or post office workers about details of stuffing or bundling mail Call post office and ask about postal rates, etc.	Postal
Instruct employees to be sure to sign out files Explain location of files Describe the filing system to employees	Filing
Ask questions about margins and spacing Ask whether correspondence is to be typed in rough draft or final form Ask whether letterhead or bond is to be used Ask which form is to be used, etc. Suggest alternate codings, etc.	Typing and Word Processing
Answer questions regarding use and status of petty cash Question and dispute facts regarding the tracing and routing of orders Ask clarifying questions regarding the preparation of purchase orders, vouchers, sales slips, etc. Instruct employees to record supplies taken	Record Keeping

OCCUPATIONALLY SPECIFIC AND GENERAL INSTRUCTIONAL MATERIALS FOR TEACHING JOB-RELATED LISTENING/SPEAKING

DC Hints for Understanding Your Phone.

The BOE Instructional Materials Lab, 1979-80.
Bulletin Board which illustrates eight difficulties people have in communicating with employers, teachers, friends.

The Business of Oral Communication: Fundamental, Person-to-Person.
South-Western, 1980.
The Fundamentals Module
Proper use of voice, conventional skills, listening.

The Language of Work.
Career, 1979-80.

Business Communications.
Missouri, 1977.
Instruction manual organized into seven units:
Human relations and communications unit most relevant to clerk-typist.

Communicating at Work, Williams and Eggland.
South-Western, 1980.
Teaches students to communicate more effectively at work and at home through exercises and activities.

Teller Techniques Mean Business.
The BOE Instructional Materials Lab.
Student manual to teach the handling of both local and long distance calls, uses of directory services and equipment.

Human Relations in Business, Eggland and Williams.
South-Western, 1977.
Vocationally oriented text and workbook dealing with the attitudinal area of human relations. Activities to teach relating well with co-workers, employers, customers.

Career Communications Series, Brown.
Bobbs-Merrill Publishers, 1976.
Fifty-three individual programmers learning units which cover reading, writing, and speaking plainly in a career-related manner.

Working With Words, revised, Putnam.
Steck-Vaughn
Speaking and reading skills combined in activities to practice forming words and sentences.

Listening on the Job.
McKnight
Cassettes include titles such as "Learning to Listen," "Listening to Earn," "Getting the Message," and "Listening With an Open Mind."

Speaking on the Job.
McKnight.
Cassettes include instructions for using the telephone, speaking and job skills.

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OCCUPATIONALLY SPECIFIC AND GENERAL INSTRUCTIONAL MATERIALS FOR TEACHING JOB-RELATED LISTENING AND SPEAKING, cont.

Body Language
Multi Media Productions, Social Studies School Service
Two color filmstrips which teach the relationship of body language to verbal communication.

Person to Person, an Introduction to Speech Communication, Calvin and Brook.
National Textbook Company, 1977.
Text which teaches one-to-one interpersonal communication, group communication, one-to-group communication.

Interpersonal Life Skills Workbook
Singer, 1979.
Cassette tapes teaching active listening, processing information, etc. for success on the job, life skills, etc.

Interpersonal Life Skills Workbook
Singer, 1979.
Student workbook teaches self-appraisal, message sending, listening, perceiving, synchronizing, and relationship building skills.

Effective Business Communications, Phillips.
Delmar, 1977.
Two chapters on listening and speaking.

Listening and Visual Skills IV: Teacher Super Duplicator Master Book.
Visual Materials, Inc., 1980.
How to listen to instructions, follow directions.

Business English and Communication, Stewart, Lanham, Zimmer, Clark, & Stead.
Gregg Division/McGraw-Hill Book Company, 1978.
Teaches the "art of Listening" and writing skills for business.

Business English, a Communications Approach, Burnett and Dollar.
Allyn and Bacon, 1979.
Text which deals with oral (including telephoning) and written communications in business.

Communicating at Work, Williams, Eggland.
South-Western, 1977.
Six chapters dealing with communication with employer, customer, fellow employees, & review.

Human Relations in Business, Eggland, Williams.
South-Western, 1977.
Text with varied individual and group activities dealing with the subjects of: human relations, self-understanding, getting along with fellow employees, employers, and customers.

Business Communications, Napier.
Instructional Materials Laboratory, Ohio State University
Instructor and student guide dealing with voice and telephone techniques, listening, and written communication.

Snap, Crackle, and Write, Schrank
National Textbook Company 1979.
Text which deals with non-verbal communication, listening & interpersonal communication.

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Appendixes

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Appendix A
Sample Request for Information

Salt Lake Skills Center

A Division of Utah Technical College

The Utah State Office of Labor and Training, through Utah Technical College, is currently involved in a project which relates specifically to basic skills requirements for entry level workers in five occupations--Secretary, Carpenter, Welder, Electronic Technician, and Retail Merchandiser.

The main objective of this project is to determine the basic skills (or competencies) required for each specific occupations mentioned above. Another objective is to locate curricula which attempts to teach those skills. We are also interested in pre and post assessments which measure a student's skills before and after instruction.

We are interested in any information your institution may provide--competency lists, instructional materials, and/or assessments. We would appreciate any knowledge, assistance, and/or contributions which may be helpful to us in this endeavor. If you are able to assist us before August 15th, we would be most grateful.

A manual, describing the basic skills (math, reading, communication skills) required to perform specific occupational tasks, and a list of instructional materials which teach those skills will be available upon request October 1, 1981.

Sincerely yours,

Marj Bradley
Project Coordinator
Utah Technical College
Skills Center
431 South 600 East
Salt Lake City, Utah 84102
(801) 531-9337
531-9347

Appendix B
Sample of Clerk-Typist Survey Form

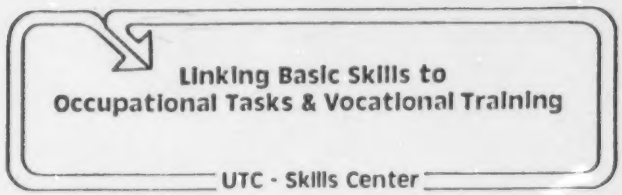
Linking Basic Skills to
Occupational Tasks & Vocational Training

UTC - Skills Center

A SURVEY OF JOB-RELATED BASIC SKILLS REQUIRED FOR CLERK-TYPISTS

OCCUPATIONAL TASKS	FREQUENCY				EQUIPMENT, MATERIALS, JOB AIDS, MACHINERY, TOOLS, ETC.	JOB-RELATED BASIC SKILLS
	Dly	Wkly	Less oftn	Nevr		

Appendix C
Basic Skills Taxonomies



READING/WRITING
KEY

JOB-RELATED READING TASKS:

1. Follow directions/instructions.
2. Find Facts, figures, or specific information.
3. Understand the meaning of facts.
4. Determine the usefulness/importance of information.
5. Relate information to another person.
6. Find mistakes/faults.
7. Retain information.
8. Analyze/solve problems.
9. Understand concepts (concrete/abstract)
10. Interpret writer's intent.

JOB-RELATED WRITING TASKS:

A. Form numbers & letters.
B. Produce legible material.
C. Spell correctly.
D. Punctuate properly.
E. Use correct grammar & diction.
F Compose phrases.
G. Compose complete sentences.
H. Organize and compose paragraphs.
I. Create memos, letters, reports.

MATH KEY

JOB-RELATED MATH TASKS:

1. COUNT OR PUT IN ORDER:
   (Verbally or in writing)
   - A. Whole Numbers
   - B. Fractions
   - C. Mixed Numbers
   - D. Decimals other than money
   - E. Money
   - F. Percents
   - G. Calendar dates

2. COMPUTE:
   (add, subtract, multiply, divide)
   - A. Whole numbers
   - B. Fractions
   - C. Mixed Numbers
   - E. Money
   - F. Percents
   - G. Distance of lines
   - H. Area
   - I. Volume
   - J. Weight
   - K. Force
   - L. Time
   - M. Rate (Speed)
   - N. Temperature
   - O. Cost
   - P. Ratio
   - Q. Proportion

3. MAKE ESTIMATES, MEASURE WITH STANDARD SYSTEM OF MEASUREMENT (English system):
   - A. Distance
   - B. Weight
   - C. Temperature (Farenheit)
   - D. Capacity (Pints, quarts, etc.)

4. CHANGE FROM ONE SYSTEM OF MEASUREMENT TO ANOTHER:
   - A. Percent to Fractions
   - B. Fractions to Decimals
   - C. Decimals to Percents
   - D. English to Metric (distance, weight, capacity)
   - E. Temperature (farenheit to celsius)

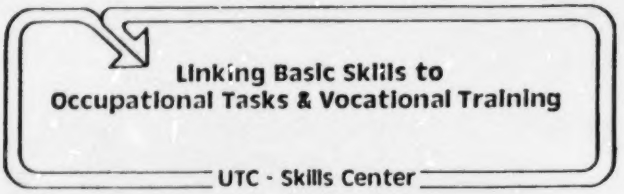
5. INTERPRET, CONSTRUCT PRESENTATIONS OF NUMBERS:
   - A. Graphs
   - B. Schedules

6. CONSTRUCT, SOLVE WORD PROBLEMS
   (Story problems)

7. SOLVE ALGEBRA PROBLEMS:
   - A. With letters as symbols
   - B. Using specific formulas

8. USE FORMULAS TO EXAMINE GEOMETRIC FORMS AND SHAPES:
   - A. Flat shapes
   - B. Three-dimensional forms

9. INTERPRET, CONSTRUCT DRAWINGS:
   - A. Scale drawings
   - B. Assembly drawings
   - C. Schematic drawings
   - D. Shop drawings



LISTENING/SPEAKING
KEY

JOB-RELATED LISTENING TASKS:

Listen to:

1. Receive descriptions, reports, or facts.
2. Receive directions, orders, or instructions.
3. Receive questions, disagreements, or disputes.
4. Receive assurances, corrections, compliments, or reprimands.
5. Receive opinions, suggestions, proposals, or recommendations.

JOB-RELATED SPEAKING TASKS:

Speak to:

A. Describe, report, or specify.

B. Direct, order, or instruct.

C. Question, express doubt, or dispute.

D. Explain, define, or interpret.

E. Evaluate, assure, correct, reprimand.

F. Advise, give opinion, propose, recommend.

Appendix D
Sample of Basic Skills Linkage Data

The information on the following page was compiled from advisory group responses to the survey. Each member was asked to respond to the need for specific basic skills tasks in performing clerk-typist tasks.

Respondents were asked to consider each occupational task as a performance in itself--isolated from any preparation or follow-up activities. The data is preliminary and subject to respondents' individual interpretations of the task statement.

OCCUPATIONAL TASK	JOB-RELATED BASIC SKILLS				
	LISTENING	SPEAKING	READING	WRITING	MATH
RECORDKEEPING DUTIES 1. Operate calculator			Read to: -follow directions or instructions -find facts, figures, and/or specific information -understand meaning of facts -analyze and/or solve problems -understand concepts		-Count or put in order all (whole numbers, fractions, mixed numbers, decimals, money, percents) -Compute whole numbers -Compute money -Compute decimals other than money (percents, cost) -Change from one system of measurement to another (fractions to decimals, decimals to percents)
2. Take inventory and record information on proper forms	Listen to: -receive descriptions, reports, specifications -receive directions, orders, instructions -receive assurances, corrections, compliments, reprimands		Read to: -follow directions or instructions -find facts, figures, and/or specific information -understand meaning of facts -relate information to another person -determine importance or usefulness of information -find mistakes or faults -retain (remember) information	Write to: -form numbers and letters -form words legibly -spell correctly -capitalize letters properly -punctuate properly -convey a written message correctly	-Count or put in order whole numbers -Compute whole numbers -Compute mixed numbers -Count or put in order fractions -Count or put in order mixed numbers